Psychosocial predictors of the use of mental health resources by persons with a severe mental illness

Tesis Doctoral

Departamento de Personalidad, Evaluación y Tratamiento Psicológicos de la Universidad de Sevilla

Doctoranda:

Gloria Bellido-Zanin

Tesis realizada bajo la dirección de la Dra. Mª Ángeles Pérez-San-Gregorio, el Dr. Agustín Martín-Rodríguez y el Dr. Antonio J. Vázquez-Morejón en el Departamento de Personalidad, Evaluación y Tratamiento Psicológicos de la Universidad de Sevilla, para la obtención del Grado de Doctor y la Mención Internacional en el Título de Doctor presenta Dña. Gloria Bellido Zanin.

En Sevilla, a 2 de Octubre de 2017.

AGRADECIMIENTOS

A todos/as los/as participantes de estos tres trabajos de investigación. Porque los problemas que nos encontramos en la clínica deben ser el principal motor que nos sirva de inspiración para seguir investigando.

Al Dr. Antonio J. Vázquez Morejón por confiar en mí, por saber llevar un equilibrio tan difícil entre la exigencia y la comprensión. Y por su dedicación a la psicología clínica que tan bien sabe transmitir.

A la Dra. Mª Ángeles Pérez San Gregorio y al Dr. Agustín Martín Rodríguez por mostrarme todos los secretos de las tareas de la investigación, por su paciencia y su sabia guía.

Al Dr. Manuel Vázquez Marrufo, al Dr. Mario Álvarez y sobre todo a D. Salvador Perona Garcelán, a todos ellos gracias por acompañarme en mi recorrido académico y por inspirarme con su dedicación y su amor a la investigación.

A mis padres, por inculcarme los valores más importantes para mí: la curiosidad por conocer, la tenacidad y el esfuerzo.

A mis amigos/as y a mis compañeras de residencia, por todos los buenos momentos que han hecho más fácil este esfuerzo.

ÍNDICE

1. MARCO LEGISLATIVO DE LA TESIS DOCTORAL

Esta Tesis Doctoral se presentará por la modalidad de tesis por compendio de publicaciones regulado por el artículo 9 de la normativa reguladora del régimen de Tesis Doctoral (Acuerdo 9.1/CG 19-4-12) de la Universidad de Sevilla. Los artículos que la componen son fruto de una línea de investigación cuyo tema principal es el estudio de las variables psicosociales como predictoras en el uso de recursos de salud mental en personas con trastorno mental grave que se ha llevado desde la colaboración entre el Hospital Universitario Virgen del Rocío y la Facultad de Psicología de la Universidad de Sevilla.

2. INTRODUCCIÓN

Los trastornos mentales graves son definidos como trastornos de la esfera psicótica, de más de dos años de duración y que conllevan una alteración grave en el funcionamiento de la persona (NIMH, 1987). Pacientes que padecen esquizofrenia, otros trastornos psicóticos o el trastorno afectivo bipolar pueden estar entre las personas que sufren un trastorno mental grave pero para estar dentro de ese grupo no es suficiente solo el diagnóstico. Las características de gravedad, cronicidad y sobre todo de deterioro en el funcionamiento son las más importantes a la hora de considerar que una persona padece un trastorno mental grave.

Padecer un trastorno mental grave está asociado a un enorme coste personal para las personas que lo padecen, pero no solo ellos se ven afectados por el trastorno. Este repercute también de forma importante en los familiares (Awad & Voruganti, 2008; Kuipers, 2010; Szkultecka-Debek et al., 2016; Thornicroft & Tansella, 2013) y en la comunidad donde viven (Carr et al., 2003). Con respecto a esto último, podemos tomar como ejemplo la esquizofrenia, de la que se han hecho un mayor número de estudios. Así se puede comprobar como las personas que la padecen realizan un alto uso de recursos sanitarios y esto está asociado a un gran coste económico para la sociedad (Chong et al., 2016; Knapp, Mangalore, & Simon, 2004).

Debido a esta gran repercusión en pacientes, familiares y la sociedad en general, muchos estudios han intentado analizar el uso de recursos sanitarios que hacen los pacientes con trastorno mental grave con el objetivo de encontrar las variables que permitirían predecir dicho uso de recursos sanitarios. El objetivo principal de esta línea de investigación es llegar a modelos lo más completos posible acerca de dichos predictores y hacer una planificación

específica de los recursos de salud mental necesarios para atender de manera eficaz y eficiente a los pacientes.

Dentro de los diferentes servicios de salud mental, después del proceso de desinstucionalización, la investigación se ha centrado sobre todo en los recursos comunitarios. Esto es así ya que en la mayoría de los países más desarrollados, los pacientes con trastorno mental grave son tratados en servicios de salud mental comunitarios, apoyados solo de forma ocasional por los servicios de hospitalización de salud mental (Moreno-Kustner et al., 2011).

En los últimos años diversas líneas de investigación han explorado el uso de recursos de salud mental y han intentado determinar cuáles son los factores que pueden estar influyendo en un mayor o menor uso de recursos por parte de los pacientes con trastorno mental grave.

La principal línea de investigación durante muchos años ha estado centrada en variables socio-económicas tales como la edad (Jin et al., 2003), el género (Lindamer et al., 2003; Usall et al., 2012), la etnia (Lee, Laiewski, & Choi, 2014), el nivel socioeconómico (Kilian, Matschinger, Becker, & Angermeyer, 2003; Tello et al., 2005) o el nivel educativo (Donisi et al., 2013; Have, Oldehinkel, Vollebergh, & Ormel, 2003; Jin et al., 2003; Kilian, Matschinger, Becker, & Angermeyer, 2003; Lindamer et al., 2003; Tello et al., 2005; Usall et al., 2012). Hay algunas discrepancias entre los resultados encontrados en estos estudios. Eso se podría explicar porque se han llevado a cabo en diferentes contextos y en diferentes países con diferentes sistemas de salud. No obstante sí que se pueden extraer algunas conclusiones como que un mayor uso de recursos se asocia a una edad más joven, a estar desempleado y a vivir en un ambiente socioeconómico más pobre.

Investigaciones posteriores han ampliado el rango de variables que se habían considerado en un primer momento incluyendo algunas de carácter más clínico como el diagnóstico y la severidad del mismo (Moreno-Kustner et al., 2011) o

variables relativas al contexto urbano (Donisi et al., 2013; Ngamini Ngui, Perreault, Fleury, & Caron, 2012). Esta progresiva incorporación de otros factores ha permitido una visión más amplia y comprehensiva de las variables implicadas en el uso de recursos.

Dentro de las variables asociadas a la clínica del paciente, como ya se ha mencionado antes, ha sido el diagnóstico y la severidad del mismo, las variables que más se han tenido en cuenta. Aunque relevantes, estas variables pueden carecer de especificidad. Esto quiere decir que las personas que padecen un trastorno mental grave, pueden padecer síntomas muy variados y diversos entre sí a pesar de compartir el mismo diagnóstico. El denominador común parece ser el tener una afectación importante en el funcionamiento y la adaptación social (APA, 2013).

Algunos autores han propuesto utilizar este criterio para una comprensión mayor de los trastornos mentales graves, desarrollando instrumentos que permitan observar las variables conductuales que se relacionan con el funcionamiento social presentes en dichos trastornos (Carpenter & Strauss, 1991). Dos enfoques principales se han derivado de este criterio: uno centrado en el funcionamiento social (Birchwood, Smith, Cochrane, Wetton, & Copestake, 1990) y otro más relacionado con los problemas de conducta que interfieren en la integración social (Wykes & Stuart, 1986).

Con respecto al funcionamiento social, en el *Handbook of Social Functioning in Schizophrenia* se definen las deficiencias en el funcionamiento social como la incapacidad de los individuos para cumplir funciones sociales definidas como el cuidado de la casa, ser trabajador, ser estudiante, ser cónyuge, familiar o amigo. Además, incluye una baja satisfacción de los individuos con su capacidad para cumplir con estas funciones, su falta de capacidad de cuidar de sí mismos y las limitaciones en sus actividades recreativas y de ocio. En investigaciones clásicas ya se menciona el funcionamiento social como uno de

los determinantes en la evolución del trastorno, la adaptación al medio comunitario (Johnstone, Macmillan, Frith, Benn, & Crow, 1990; Perlick, Stastny, Mattis, & Teresi, 1992; Rajkumar & Thara, 1989), el coste de los servicios (Byford, Barber, Fiander, Marshall, & Green, 2001; McCrone, Thornicroft, Parkman, Nathaniel-James, & Ojurongbe, 1998) y el número de ingresos y visitas a urgencias (Raudino et al., 2014). Por ello parece fundamental incluirla en la lista de factores a tener en cuenta a la hora de predecir la cantidad y el uso de recursos.

Además y en relación con el tema de la presente Tesis Doctoral, algunos estudios ya la han señalado como una variable que influye en el número de hospitalizaciones o el tiempo total de hospitalizaciones (Lay, Lauber, & Rossler, 2006; Oiesvold et al., 2000).

No obstante, el funcionamiento social no ha sido explorado de forma pormenorizada en todas las dimensiones que incluye ni ha sido estudiado su valor predictivo en toda la variedad de recursos de salud mental que incluyen los servicios sanitarios. Por esa razón, la primera línea de esta Tesis Doctoral pretende comprobar si el funcionamiento social y sus diferentes dimensiones predicen en las personas con trastorno mental grave el uso de recursos de salud mental tanto del ámbito comunitario como en el de hospitalización.

Otra variable que también se puede considerar relevante en la descripción de las dificultades de los pacientes con trastorno mental grave son los problemas de conducta.

El estudio de los problemas de conducta en los trastornos mentales graves como la esquizofrenia y otros trastornos psicóticos, surge de la necesidad de desarrollar medidas capaces de dar información acerca de la adaptación de las personas con trastorno mental grave a su medio social (Carpenter & Strauss, 1991; Wykes & Sturt, 1986). Los problemas de conducta pretenden ser una aproximación más objetiva y observable que los síntomas clásicos, que a veces

son difíciles de objetivar. Investigaciones anteriores han pretendido determinar cuáles son los problemas de conducta más relevantes en los trastornos psicóticos. Así, Harvey, Curson, Pantelis, Taylor & Barnes (1996) encontraron 4 factores comportamentales en la esquizofrenia en un estudio que fue posteriormente replicado y confirmado (Curson, Duke, Harvey, Pantelis, & Barnes, 1999). Esos cuatro factores que se obtuvieron de la *Social Behaviour Schedule* (Wykes & Sturt, 1986) se nombraron como aislamiento social, perturbaciones del pensamiento, conducta antisocial y depresión. Esto ha ofrecido una nueva perspectiva a la hora de entender los diferentes componentes de los trastornos psicóticos y estudiar la adaptación de los pacientes con este tipo de diagnósticos a la comunidad (Cella et al., 2014).

Sin embargo, ningún estudio previo conocido por los autores ha intentado comprobar cómo los problemas de conducta influyen en el uso de recursos de salud mental o qué otras variables pueden estar implicadas en dicha predicción. Por lo tanto, otro objetivo en esta primera línea de investigación de la presente Tesis Doctoral es estudiar cómo los problemas de conducta y sus diferentes dimensiones predicen el uso de recursos de salud mental comunitarios y de hospitalización en personas con trastorno mental grave.

A parte de estas variables de adaptación social, mencionadas en los párrafos anteriores, otras variables escasamente exploradas en la predicción de uso de recursos de salud mental, han sido las variables asociadas a los familiares de los pacientes.

Desde el proceso de desinstitucionalización en el que los pacientes con trastorno mental grave han pasado de vivir en hospitales psiquiátricos a vivir en la comunidad, ha habido un creciente interés por estudiar variables asociadas a sus familiares. Ellos se han convertido en las principales personas a cargo del cuidado de los pacientes con trastorno mental grave y han pasado a ser, a veces, una parte integrada en el equipo terapéutico. La literatura

científica sugiere que los familiares experimentan un estrés significativo a la hora de asumir esta carga. Los cuidadores sufren una carga emocional, financiera y física mientras están asumiendo ese rol. Dentro de la línea de estudio de la carga familiar el principal enfoque ha estado dirigido a clarificar cuáles son las variables que contribuyen a aumentarla.

Los problemas de conducta de los pacientes con trastorno mental grave han sido una de las variables que se han señalado, junto con la sintomatología, como predictoras de una mayor carga familiar percibida (Boye et al., 2001; Wolthaus et al., 2002), lo que nos indicaría que los familiares de pacientes con mayores problemas de conducta podrían verse más desbordados a la hora de cuidarles en sus hogares. Pero no solo se ha asociado la carga familiar con características de los pacientes si no también con características de los propios familiares. La emoción expresada, una variable que recoge la sobreimplicación y el criticismo de los familiares hacia los pacientes, correlaciona positivamente con una mayor carga percibida por parte de los familiares (Carra, Cazzullo, & Clerici, 2012).

La emoción expresada además, se ha mostrado como una predictora fiable de la evolución de los pacientes con esquizofrenia, estando asociada a un porcentaje mayor de recaídas (Hanzawa et al., 2013; Moller-Leimkuhler & Wiesheu, 2012). En este sentido, algunos autores han señalado que una reducción de la carga familiar, puede implicar una mejor evolución en los pacientes con trastornos mentales, teniendo así menos recaídas y periodos de hospitalización (Sono et al., 2012). Esto nos puede indicar que la carga familiar estará relacionada con la evolución del trastorno por lo que sería adecuado preguntarnos si también lo estará con el mayor uso de recursos de salud mental. En este sentido, un estudio previo ha demostrado esta relación entre las características de los cuidadores y el uso de recursos de salud mental (Smith, 2003).

Estas tres variables, funcionamiento social, problemas de conducta y carga familiar han sido escasamente estudiadas de forma sistemática en las investigaciones acerca de los modelos predictivos de recursos de salud mental.

Con respecto a la metodología de las investigaciones revisadas, es importante señalar que, a pesar de ser muy valiosas para ir aproximándose a una visión más completa del problema, suelen presentar una limitación común: la mayoría de ellas se realizan con un diseño transversal por lo que no pueden extraerse conclusiones que hagan referencia a los cambios acontecidos con el transcurso del tiempo (Kilian et al., 2003).

De cara a incluir estas variables en los modelos predictores parece importante llevar a cabo estudios longitudinales que permitan sacar conclusiones predictivas.

En resumen, en la presente Tesis Doctoral se proponen tres investigaciones empíricas, todas ellas ya publicadas en revistas indexadas en la *Journal Citation Reports* (JCR) de *ISI Web of Knowledge*, en las que se pretendió determinar: a) la capacidad de predicción que tiene el funcionamiento social y los problemas de conducta de los pacientes con trastorno mental grave en el uso de recursos de salud mental, y b) el papel de la variable carga familiar percibida a la hora de predecir el uso de recursos de salud mental en pacientes con trastorno mental grave. En la Tabla 1 se resumen los objetivos (generales y específicos), así como los aspectos que conciernen al método (diseño, tamaño muestral, análisis estadísticos) de cada uno de los tres trabajos que conforman esta Tesis Doctoral.

Tabla 1. Objetivos y método de los trabajos que conforman la presente Tesis Doctoral.

Objetivo general	Determinar la capacidad de predicción que tiene el funcionamiento social y los problemas de conducta de los pacientes con trastorno mental grave en el uso de recursos de salud mental	
Título del trabajo	*Social functioning as a predictor of the use of mental health resources in patients with severe mental disorder*	*Predictors in use of mental health resources: the role of behaviour problems in the patients with severe mental illness*
Objetivos específicos	- Determinar si la medida global de funcionamiento social predice el uso de recursos de salud mental que hacen los pacientes con trastorno mental grave. - Determinar si alguna de las subescalas de funcionamiento social predice el uso de recursos de salud mental que hacen los pacientes con trastorno mental grave.	- Determinar si la medida global de problemas de conducta predice el uso de recursos de salud mental que hacen los pacientes con trastorno mental grave. - Determinar si alguna de las subescalas de los problemas de conducta predice el uso de recursos de salud mental que hacen los pacientes con trastorno mental grave.
Método	- Diseño longitudinal: T1 y T2 (12 meses). - n = 172 pacientes. - Regresión logística bivariada.	- Diseño longitudinal: T1, T2 (12 meses) T3 (24 meses) y T4 (36 meses). - n = 185 pacientes. - Regresión logística bivariada.
Objetivo general	Determinar el papel de la variable carga familiar percibida a la hora de predecir el uso de recursos de salud mental en pacientes con trastorno mental grave.	
Título del trabajo	*Relationship between behavioural problems and use of mental health services in patients with severe mental illness and the mediating role of the perceived burden of care.*	
Objetivos específicos	- Determinar si la carga familiar percibida de los familiares de personas con trastorno mental grave predice el uso que éstos hacen de los servicios de salud mental. - Determinar si la carga familiar percibida de las personas con trastorno mental grave actúa como mediadora entre los problemas de conducta y el uso de recursos de salud mental de éstos.	
Método	- Diseño longitudinal: T1, T2 (12 meses) T3 (24 meses) y T4 (36 meses). - n = 179 pacientes. - Método de ecuaciones estructurales.	

3. OBJECTIVES.

1. Determine the capacity of social functioning and behavior problems of patients with a severe mental illness for predicting the use of mental health resources.
   1.1. Determine whether the overall social functioning scale predicts use of mental health resources by patients with a severe mental illness.
   1.2. Determine whether any of the social functioning subscales predicts the use of mental health resources by patients with a severe mental illness.
   1.3. Determine whether the overall measure of behavior problems predicts use of mental health resources by patients with a severe mental illness.
   1.4. Determine whether any of the behavior problem subscales predicts the use of mental health resources by patients with a severe mental illness.
2. Determine the role of perceived family burden in predicting the use of mental health resources by patients with a severe mental illness.
   2.1. Determine whether perceived family burden from persons with a severe mental illness predicts their use of mental health services.
   2.2. Determine whether perceived family burden from persons with a severe mental illness mediates between behavior problems and their use of mental health resources.

4. TRABAJOS QUE CONFORMAN LA TESIS DOCTORAL

4.1. Primer trabajo titulado "Social functioning as a predictor of the use of mental health resources in patients with severe mental disorder"

Este trabajo corresponde al artículo publicado que se referencia a continuación:

Bellido-Zanin, G., Pérez-San-Gregorio, M. Á., Martín-Rodríguez, A., & Vázquez-Morejón, A. J. (2015). Social functioning as a predictor of the use of mental health resources in patients with severe mental disorder. *Psychiatry Research*, 230,189-193. http://dx.doi.org/10.1016/j.psychres.2015.08.037

Abstract

Previous studies have tried to determine the factors causing greater use of health resources by patients with mental disorders. These studies have essentially focused on socio-economic variables. Nevertheless, many other variables, such as social functioning, have not yet been explored. This study aims to assess the effect of social functioning on mental health service use in a sample of patients with severe mental disorder (schizophrenia, other psychotic disorders or bipolar affective disorder) in an area of Spain. The Social Functioning Scale (SFS) was administered to 172 family members of patients with a severe mental disorder who were receiving care at a community mental health unit. Analysis of bivariate logistic regression identified specific areas as predictors of the use of mental health resources over a 12-month follow-up period. The overall social functioning score predicted need for hospital admissions. In addition, interpersonal behaviour had a major role in the number of outpatient visits, while social isolation significantly predicted the need for hospitalization. These results point out the necessity for including psychosocial variables, such as social functioning in current mental health resource use models.

Introduction

People with a severe mental health disorder such as schizophrenia, other psychotic disorders or bipolar affective disorder usually show more signs of severity and recurrence than those found in other mental disorders. These conditions are usually related to a greater need for mental health assistance resources (Knapp et al., 2004) and increased costs (Carr et al., 2003; Somaiya et al., 2014).

In order to care for this population as efficiently as possible, adequate, reasoned planning of mental health services is crucial. Efficient, real needs-

oriented planning implies the need to verify the variables that may influence use of resources.

In the last few years, several studies have focused on this need to determine factors that may influence more or less use of resources by patients with mental disorders. These studies have essentially focused on socio-economic variables such as age (Jin et al., 2003), sex (Lindamer et al., 2003; Usall et al., 2012), ethnic group (Lee et al., 2014; Mann et al., 2014), socio-economic status (Kilian et al., 2003; Tello et al., 2005), or education (Have et al., 2003; Jin et al., 2003; Kilian et al., 2003; Lindamer et al., 2003; Tello et al., 2005; Usall et al., 2012; Donisi et al., 2013).

Further research has extended the range of starting variables to include individual character variables such as diagnosis and severity (Moreno-Kustner et al., 2011), and variables related to urban context and neighbourhood (Ngamini Ngui et al., 2012; Donisi et al., 2013). The gradual inclusion of other factors allows a broader, more comprehensive view of resource-related variables.

Nevertheless, many other variables have not yet been explored, or have hardly been considered. This is the case of psychosocial variables, such as social functioning. Other studies have considered social functioning a decisive factor in disorder development, adaptation to the community environment of the patients (Rajkumar and Thara, 1989; Johnstone et al., 1990; Perlick et al., 1992), cost of the services (McCrone et al., 1998; Byford et al., 2001) and number of emergency admissions and visits (Raudino et al., 2014), so it seems to be closely linked to the severity of the disorder, and thus to a greater need for health resources. It therefore seems essential to include it in the list of factors predicting the amount and use of resources.

Some studies have already shown social functioning to be a variable affecting the number of hospital admissions and total time spent in hospital (Oiesvold et

al., 2000; Lay et al., 2006). However, these studies are limited by not including other types of mental health resources, such as community resources, which are crucial and have significantly increased in the last few years (Pezzimenti et al., 2006; Tansella et al., 2006; Thomas and Rick-wood, 2013).

It is important to note that while the studies reviewed have proved very useful in approaching a more comprehensive vision of the problem, most of them are limited by their cross-sectional design, so only descriptive conclusions can be drawn from them (Kilian et al., 2003).

An approach integrating different types of variables is therefore necessary, as well as all kinds of mental health resources, not only hospital admissions but community mental health services.

This study is part of a wider research project on social functioning in patients with severe mental disorders aimed at verifying and explaining the role of social functioning in the use of mental health resources. Our hypothesis is that the score on social functioning is a predictor of the use of mental health resources in the sense that patients with severe mental disorders with worse social functioning will make more use of resources.

The different aspects of social functioning that are the best predictors for each resource are specifically examined.

Method

Subjects

Participants in the study were 172 patients diagnosed with severe mental disorders: schizophrenia (F. 20 according to ICD-10), other psychotic spectrum disorders (F.21–F.29 according to ICD-10) and Type 1 bipolar disorder (F.31 according to ICD-10) who were receiving care at the same Community Mental Health Unit (CMHU), one of the six Virgen del Rocío University Hospital community mental health units in Seville. This unit serves an urban population

of 125,493 people. At the time of writing, 217 patients diagnosed with severe mental disorders were being cared for. Criteria for inclusion were a severe mental disorder, age from 18 to 65 and signed informed consent. The criteria for exclusion were any other diagnosis, not within the age limits, any brain damage or mental retardation or not being hospitalized at the time of evaluation.

Finally the reasons to not participate in the study were: 31 of them did not have any relative or the questionnaire was un-completed, 11 of them were rejected by the doctor responsible and in 6 cases, the family member refused to participate.

The diagnosis was made by the clinical psychologist or psychiatrist responsible for each patient using a clinical interview. All patients diagnosed with these disorders and receiving active treatment at the centre were included in the study.

Instrument and study measures

- The Social Functioning Scale

The Social Functioning Scale (Birchwood et al., 1990) was de-signed to evaluate the most relevant areas of social functioning so that people with schizophrenia could remain in their community. It is composed of 77 items grouped into seven subscales: Withdrawal/Social engagement, with scores ranging from 0 to 15 on items such as, 'How many hours do you spend alone every day?', Interpersonal Behaviour, with scores ranging from 0 to 9 with items such as, 'How many friends do you currently have?', Pro-social Activities, with scores ranging from 0 to 66 on items such as, 'Going to the cinema', or 'Watching outdoor sports', Recreation, from 0 to 45 with items such as, 'Playing musical instruments' or 'Cooking', Independence – Performance, with scores ranging from 0 to 39 and Independence–

Competence, with scores ranging from 13 to 39. Both of the last two scales include the same items, but one is answered on the basis of the patients' ability to carry out various tasks and the other is answered on the basis of the task they actually perform. Finally, Employment/Occupation, with a high score of 10 points, includes items such as 'Do you have a regular job?' Each item score ranges from 0 to 3 depending on the subscale. The assessment method is based on a series of skills or behaviours the individual may have. Higher scores always show better social functioning. For this study, the scale was filled in by patients' families, as this version has been shown to be better adjusted to the real situation of the patient rather than the version answered by the patients themselves, especially for men (Jiménez García-Bóveda et al., 2000). The psychometric properties have been examined both in the English version (Birchwood et al., 1990) and the Spanish version (Vazquez Morejon and Jiménez García-Boveda, 2000), showing results that support the validity and reliability of the scale. Internal reliability scores (Cronbach's alpha) of the Spanish version are good with an alpha of 0.85. Temporary reliability for a 3-month interval is 0.84. This Social Functioning Scale was chosen because it is often used with populations with severe mental disorders, and because of the variety of areas of functioning it overs. Furthermore, the items refer to observable and quantifiable behaviour which makes the results more objective.

- Mental health resources use measures

The resource use variables were collected using data available from computerized Andalusian Health Service records. This software records all patients and their Mental Health Service contacts. All mental health services available were included. The following variables were considered:

- Variables related to outpatient visits: total number of CMHU interventions. The CMHU is a healthcare unit serving as a referral

outpatient clinic for the population diagnosed with a mental health disorder by primary attention.

- Other types of outpatient programmes. Patients may also be referred to other types of outpatient programmes available for patients with severe mental disorders, such as the Mental Health Therapeutic Community (MHTC) or the Mental Health Re-habilitation Unit (MHRU). The MHTC is a unit where patients diagnosed with severe mental disorders and serious functional and social deterioration are admitted for long-term attention to stabilize their psychopathology and improve their adaptation to their environment. The MHRU is a unit where patients with chronic severe mental disorders with long evolution receive intensive social rehabilitation care in an outpatient clinic setting.

- Hospital admissions during the follow-up period.

- Lavik index. A service use index summarizing the total mental health resources patients use during follow-up in a single score (Lavik, 1983): 1 day of admission = 3 points; 1 day in MHTC or one contact in MHRU = 2 points; 1 outpatient contact = 1 point.

Procedure

After provision of informed consent, the Social Functioning Scale was administered to close relatives of patients diagnosed with schizophrenia, other psychotic disorder or bipolar affective disorder who received care at a Virgen del Rocío University Hospital Community Mental Health Unit in Seville (Spain), as part of a wider social functioning and psychosis research project. Assessments were made for three consecutive years, starting from when the patients joined the centre's psychoeducational groups. Each patient was monitored for the following 12 months after the original assessment, and every contact with the mental health services was collected using their identification

number in the computerized Andalusian Health Service records. These data were related to the total number of appointments, number and duration of admissions and periods of care at an MHTC or MHRU.

Statistical analyses

The SPSS v.22 statistical package was used for the statistical analyses:

- Resources used

A descriptive analysis of the type and amount of resources required by the patients during the 12-month follow-up period was obtained.

- Logistic regression analysis

Logistic regression analysis was performed to identify significant predictors of more use of resources. This type of regression was selected because the collected data did not fulfil the requirements for linear regression. The measure of the hospital ad-mission variable was whether admission occurred during the year after the assessment. At the beginning, the rest of the resource use-related variables were quantitative, so they were reclassified by sample distribution: a group under the 50th percentile with average care of less than one contact per month and another group above that percentile with more than one contact per month. This decision was made on the basis of several statistical criteria. In this case, the resource use variables did not meet the basic assumptions of normality or homoscedasticity for linear regression analysis. The clinical criterion that more than one contact per month shows frequent assistance by the Andalusian Health Service was also followed. Two analyses per resource were made, the first using overall social functioning data and another using the social functioning subscales.

Results

Descriptive analysis

Table 1 shows the results of the descriptive analysis of the resource use measures during the 12-month follow-up period. Patients referred to a therapeutic community were eliminated as there were only three cases and they could have skewed results. Follow-up of most of the remaining 169 patients was exclusively by their referral CMHU. Only 17.2% needed referral to the MHRU and 12.4% required hospital admission.

Socio-demographic data of the participants in the study were as follows: the group was composed of 103 males (59.9%) and 66 females (40.1%) with an average age of 37.63 years (S.D. = 9.71; range = 17–56). Most participants were single (N = 137, 81.1%), 19 were married (11.2%) and the rest were separated or widowed (7.7%). In the sample, 121 participants had been diagnosed with schizophrenia (71.6%), 25 with other psychotic disorders (14.8%) and 23 with bipolar affective disorder (11.8%).

Table 2 shows the descriptive analysis of the SFS data collected.

Table 1. Descriptive analysis of the use of mental health resources during the 12-month follow-up period (n = 169).

Type of resource	N	%	M	S.D.
CMHU	169	100	15.09	12.12
MHRU	21	12.4	6.51	16.45
MHHU	29	17.2	3.18	22.77
Total amount of resources	169	100	37.67	76.89

CMHU, community mental health unit; MHRU, mental health rehabilitation unit; MHHU, mental health hospitalization unit; M: mean; S.D: standard deviation.

Table 2. Descriptive analysis of the data collected from Social Functioning according to the SFS scale (n = 169).

	M	S.D

Engagement/social isolation	10.04	2.69
Interpersonal behaviour	6.27	2.34
Prosocial activities	24.92	9.09
Recreation	15.36	6.59
Independence-perfomance	14.79	9.36
Independence-competence	33.79	5.34
Employement/occupation	7.00	5.78
Total Social Functioning	111.63	32.20

Predictors of use of health resources

Table 3 shows bivariate logistic regression data using the overall social functioning as a predictor. As observed in the table, these data are only good predictors of the necessity of one or more hospital admissions (p = 0.015), and are not a significant result for the rest of the resources (Table 4).

More or fewer appointments at each patient's referral CMHU was determined by two subscales: interpersonal behavior, which has an inverse relationship (p = 0.005) with higher use of re-sources, and prosocial activities, which have a more direct relationship (p = 0.036).

Need for hospitalization during follow-up was predicted by the social engagement subscale (p = 0.004) and the need for referral to the MHRU was predicted by the employment/occupation subscale (p = 0.05).

Finally, the total sum of resources variable was predicted by the interpersonal behavior subscale (p = 0.043).

The same table shows the subscale items that were the best predictors of the number of appointments at the CMHU and the total number of services. Hospital admission and MHRU variables have been eliminated, as there are no significant items.

From 4% to 21% of the variance is explained by the models using the Nagelkerke measure, which is a low proportion of small or moderate variance.

Table 3. Total social functioning as a predictor of other types of resources (n = 169).

	OR	95% CI	*p*
CMHU (R^2 (Nagelkerke = .010)	.99	(.98–1.01)	.335
MHRU (R^2 (Nagelkerke = .011)	.99	(.98–1.01)	.285
MHHU (R^2 (Nagelkerke = .150)	.97	(.94–.99)	.015
Total amount of resources (R^2 (Nagelkerke = .013)	.99	(.99–1.01)	.156

CMHU, community mental health unit; MHRU, mental health rehabilitation unit; MHHU, mental health hospitalization unit.

Table 4.
Significant subscales in the prediction of the use of mental health resources

(n = 169).

	OR	95% CI	*p*

Number of appointments at the CMHU	The percentage of variance explained by model is R^2 (Nagelkerke) = .088			
Interpersonal behaviour	.53	.34–.83	.005	
Prosocial activities	1.59	1.03–2.44	.036	
Necessity of hospital admission (MHHU)	The percentage of variance explained by model is R^2 (Nagelkerke = .217			
Engagement/ social isolation	.29	.12–.67	.004	
Necessity of referral to the MHRU	The percentage of variance explained by model is R^2 (Nagelkerke) = .053			
Employment/ occupation	.60	.36–.99	.05	
Total number of contacts	The percentage of variance explained by model is R^2 (Nagelkerke)¼.043			
Interpersonal behaviour	.69	.48–.99	.043	

CMHU, community mental health unit; MHRU, Mental health rehabilitation unit; MHHU, mental health hospitalization unit.

Discussion

This study examined the role of social functioning and its different areas in predicting the use of mental health resources by patients with a severe mental disorder. These data generally confirm the importance of social functioning as a predictor of mental health resources.

The main finding was that overall measures of social functioning significantly predict the need for one or more hospital admissions. This is in line with previous results which relate poorer social functioning with more hospital admissions and emergency visits (Raudino et al., 2014).

However, considering the diversity in social functioning dimensions, differential relationships of these dimensions and the use of resource variables must be studied, especially when the results of previous research note that different factors on the Social Functioning Scale could be related to other variables in different ways (Jiménez García-Bóveda et al., 2004).

In fact, results of our study show the complexity of the relationships between social functioning and use of mental health resources. The various dimensions of social functioning predict the use of mental health resources in patients with mental health resources differently.

Thus the interpersonal behavior subscale is the most significant in our analysis as it predicts the number of appointments that patients will need at a CMHU. On the other hand, it is moderately related to the total amount of contacts that patients require during the 12 months following their assessment, including appointments in CMHU and MHRU and hospitalization. The direction of this relationship is as expected, as poorer social functioning is related to a greater need for resources. A deficit in social skills, evaluated in the Interpersonal behavior dimension, has been pointed out as being of special importance in people with mental health disorders. In fact, the influence of interpersonal

functioning on the evolution and prognosis of mental health disorders has been studied (Velthorst et al., 2010), and its relevance to the evolution of the mental health disorder could point to interpersonal behavior as one of the decisive variables increasing the demand for health care.

Second, our data show the role of social isolation in predicting hospital admissions, since more socially isolated patients have a higher probability of hospital admission during the following 12 months. This conclusion is consistent with previous findings that link the first admission and rehospitalization to living alone, which could contribute to social isolation (Oiesvold et al., 2000; Pezzimenti et al., 2006).

Another variable relevant to the prediction of mental health resources is occupation, as measured by the SFS employment/occupation scale, which was demonstrated in this study to be relevant to prediction of Mental Health Rehabilitation Unit use. Although we did not find any previous references to this, it does seem a plausible result considering that the main purpose of this unit is to restore the occupational functioning of patients with a severe mental health disorder.

As confirmed here, poorer social functioning usually predicts more frequent use of resources. However, it does not when using the prosocial activities scale, which does directly predict more appointments at an MHCU. This originally surprising result could be explained in several ways. One possibility could be related to more stress in patients undertaking more activities, and the subsequent higher risk of a relapse (Nuechterlein et al., 1994). The problem with this explanation is the role of prosocial activities in predicting use of the MHCU but not requiring hospitalization. The main difference between these two services is that the MHCU is voluntary, while hospital admission is often involuntary and may result from the patient's relapse. Another possible explanation could be that patients willing to engage in activities outside the

home, which is measured by the prosocial activities scale, would be more likely to adhere more faithfully to their treatment and receive more outpatient healthcare. Furthermore, the high score of some patients' prosocial activities could be related to adherence to the health system's prosocial programs. Inclusion of a treatment adherence variable could therefore be of interest for future studies.

In conclusion, it seems that social functioning and, specifically, some areas related to interpersonal contact can predict the short-term need for resources of these patients. The variance found is low or moderate, but this is in line with the presence of other variables that also influence use of resources, such as clinical and socio-demographic variables (Have et al., 2003; Jin et al., 2003; Kilian et al., 2003; Lindamer et al., 2003; Tello et al., 2005; Moreno-Kustner et al., 2011; Usall et al., 2012; Donisi et al., 2013; Lee et al., 2014). Another hypothesis is that the low variance found is due not only to social functioning being a weaker predictor, but the way healthcare is planned. Mental health resources are meant to provide care for all patients. However, sometimes a lack of resources could force the health system to prioritize some patients. Those who suffer from positive or disorganized symptomatology with behavioral problems may be seen as more in need of mental health resources than other patients with poor functioning, acute isolation and few social relationships. In fact, violent behavior has been considered one of the main reasons for entering the mental health system (Mulder et al., 2014). This kind of symptomatology may be disturbing to the patient's family and social contacts, and therefore, strongly demands healthcare. It would be necessary to study variables such as adherence to treatment, social support or behavioral problems in order to ascertain how these aspects mediate between social functioning and a greater need for resources.

Our study had a number of limitations. First, it was impossible to include all mental health resources, such as the Community Mental Health Unit, or other types of social resources such as associations or residential resources, due to their limited representation of patients. Therefore, it would be of interest for future research to also include all these other types of resources that could be related to social functioning.

A second limitation is that other variables included in previous studies on use of resources, such as clinical or sociodemographic variables, were not included in our study. However, the role of these variables has been thoroughly explored, and we suppose that in our study they were not very different from what has been found previously. Future research should include a wide number of variables to achieve a comprehensive model of the use of mental health resources.

Another limitation we observed is that only data from the questionnaires filled in by family members were used. Previous studies have found that these data may be better adjusted to reality than those provided by the patients themselves (Jiménez García-Bóveda et al., 2000). However, it is also true that in certain areas of social functioning, such as leisure, the answers of the patients themselves may be more useful, as they know more about their own activities, so the data from the questionnaires filled out by the patients themselves could be used in future studies.

Finally, even though a period of 12 months is longer than in previous studies, future studies would benefit from replicating the present findings over a longer period of time to better understand the role of social functioning in the long-term prediction of use of mental health resources.

This study has shown the need to expand the variables included in current models and the importance of a more profound analysis delving deeper into psychosocial variables such as social functioning. The comprehensive

development of these models will enable better planning of mental health services and increase patient satisfaction.

References

- Birchwood, M., Smith, J., Cochrane, R., Wetton, S., Copestake, S., 1990. The social functioning scale-the development and validation of a new scale of social adjustment for use in family intervention programs with schizophrenic patients. Br. J. Psychiatry 157, 853–859.
- Byford, S., Barber, J.A., Fiander, M., Marshall, S., Green, J., 2001. Factors that influence the cost of caring for patients with severe psychotic illness. Br. J. Psychiatry 178, 441–447.
- Carr, V.J., Johnston, P.J., Lewin, T.J., Rajkumar, S., Carter, G.L., Issakidis, C., 2003. Patterns of service use among persons with schizophrenia and other psychotic disorders. Psychiatr. Serv. 54, 226–235.
- Donisi, V., Tedeschi, F., Percudani, M., Fiorillo, A., Confalonieri, L., De Rosa, C., Sal-azzari, D., Tansella, M., Thornicroft, G., Amaddeo, F., 2013. Prediction of com-munity mental health service utilization by individual and ecological level socio-economic factors. Psychiatry Res. 209, 691–698.
- Have, M.T., Oldehinkel, A., Vollebergh, W., Ormel, J., 2003. Does educational background explain inequalities in care service use for mental health problems in the Dutch general population? Acta Psychiatr. Scand. 107, 178–187.
- Jiménez García-Bóveda, R., Vázquez Morejón, A.J., Waisman, L.C., 2000. Género y funcionamiento social en esquizofrenia. Papeles Psicól. 75, 27–33.

- Jiménez García-Bóveda, R.J., Morejón, A.J.V., Jiménez, R.V.M., 2004. Habilidad social y funcionamiento social en pacientes con esquizofrenia. Apunt. Psicol. (22), 111–120.
- Jin, H., Folsom, D.P., Lindamer, L., Bailey, A., Hawthorne, W., Garcia, P., Jeste, D.V., 2003. Patterns of public mental health service use by age in patients with schizophrenia. Am. J. Geriatr. Psychiatry 11, 525–533.
- Johnstone, E.C., Macmillan, J.F., Frith, C.D., Benn, D.K., Crow, T.J., 1990. Further investigation of the predictors of outcome following 1st schizophrenic episodes. Br. J. Psychiatry 157, 182–189.
- Kilian, R., Matschinger, H., Becker, T., Angermeyer, M.C., 2003. A longitudinal analysis of the impact of social and clinical characteristics on the costs of schizophrenia treatment. Acta Psychiatr. Scand. 107, 351–360.
- Knapp, M., Mangalore, R., Simon, J., 2004. The global costs of schizophrenia. Schizophr. Bull. 30, 279–293.
- Lavik, N.J., 1983. Utilization of mental-health-services over a given period. Acta Psychiatr. Scand. 67, 404–413.
- Lay, B., Lauber, C., Rossler, W., 2006. Prediction of in-patient use in first-admitted patients with psychosis. Eur. Psychiatry 21, 401–409.
- Lee, S., Laiewski, L., Choi, S.H., 2014. Racial-ethnic variation in US mental health service use among Latino and Asian non-US citizens. Psychiatr. Serv. 65, 68–74.
- Lindamer, L.A., Bailey, A., Hawthorne, W., Folsom, D.P., Gilmer, T.P., Garcia, P., Hough, R.L., Jeste, D.V., 2003. Gender differences in characteristics and service use of public mental health patients with schizophrenia. Psychiatric Serv. 54, 1407–1409.

- Mann, F., Fisher, H.L., Johnson, S., 2014. A systematic review of ethnic variations in hospital admission and compulsory detention in first-episode psychosis. J. Ment. Health 23, 205–211.
- McCrone, P., Thornicroft, G., Parkman, S., Nathaniel-James, D., Ojurongbe, W., 1998. Predictors of mental health service costs for representative cases of psychosis in south London. Psychol. Med. 28, 159–164.
- Moreno-Kustner, B., Mayoral, F., Rivas, F., Angona, P., Requena, J., Garcia-Herrera, J. M., Navas, D., Moreno, P., Serrano-Blanco, A., Bellon, J.A., 2011. Factors associated with use of community mental health services by schizophrenia patients using multilevel analysis. BMC Health Serv. Res. 11, 257.
- Mulder, C.L., Ruud, T., Bahler, M., Kroon, H., Priebe, S., 2014. The availability and quality across Europe of outpatient care for difficult-to-engage patients with severe mental illness: a survey among experts. Int. J. Soc. Psychiatry 60, 304–310.
- Ngamini Ngui, A., Perreault, M., Fleury, M.J., Caron, J., 2012. A multi-level study of the determinants of mental health service utilization. Rev. Epidemiol. Santé Publique 60, 85–93.
- Nuechterlein, K.H., Dawson, M.E., Ventura, J., Gitlin, M., Subotnik, K.L., Snyder, K.S., Mintz, J., Bartzokis, G., 1994. The vulnerability/stress model of schizophrenic relapse: a longitudinal study. Acta Psychiatr. Scand. Suppl. 382, 58–64.
- Oiesvold, T., Saarento, O., Sytema, S., Vinding, H., Gostas, G., Lonnerberg, O., Muus, S., Sandlung, M., Hansson, L., 2000. Predictors for readmission risk of new patients: the Nordic Comparative Study on Sectorized Psychiatry. Acta Psychiatr. Scand. 101, 367–373.

- Perlick, D., Stastny, P., Mattis, S., Teresi, J., 1992. Contribution of family, cognitive and clinical dimensions to long-term outcome in schizophrenia. Schizophr. Res. 6, 257–265.
- Pezzimenti, M., Haro, J.M., Ochoa, S., Gonzalez, J.L., Almenara, J., Alonso, J., Moreno, B., Muñoz, P.E., Jaúregui, V.M., Grp, P., 2006. Assessment of service use patterns in out-patients with schizophrenia: a Spanish study. Acta Psychiatr. Scand. 114, 12–18.
- Rajkumar, S., Thara, R., 1989. Factors affecting relapse in schizophrenia. Schizophr. Res. 2, 403–409.
- Raudino, A., Carr, V.J., Bush, R., Saw, S., Burgess, P., Morgan, V.A., 2014. Patterns of service utilisation in psychosis: findings of the 2010 Australian national survey of psychosis. Aust. N. Z. J. Psychiatry 48, 341–351.
- Somaiya, M., Grover, S., Avasthi, A., Chakrabarti, S., 2014. Changes in cost of treating schizophrenia: comparison of two studies done a decade apart. Psychiatry Res. 215, 547–553.
- Tansella, M., Amaddeo, F., Burti, L., Lasalvia, A., Ruggeri, M., 2006. Evaluating a community-based mental health service focusing on severe mental illness. The Verona experience. Acta Psychiatr. Scand. 113, 90–94.
- Tello, J.E., Mazzi, M., Tansella, M., Bonizzato, P., Jones, J., Amaddeo, F., 2005. Does socioeconomic status affect the use of community-based psychiatric services? A south Verona case register study. Acta Psychiatr. Scand. 112, 215–223.
- Thomas, K.A., Rickwood, D., 2013. Clinical and cost-effectiveness of acute and subacute residential mental health services: a systematic review. Psychiatr. Serv. 64, 1140–1149.

- Usall, J., Iniesta, R., Ochoa, S., Villalta, V., Suarez, D., Pezzimenti, M., Moneta, V., Torres, M., Mochón, F., Millan, J., 2012. Gender differences in the use of mental health services in a Barcelona area. Eur. J. Psychiatry 26, 30–40.
- Vazquez Morejon, A.J., Jiménez García-Boveda, R., 2000. Social functioning scale: new contributions concerning its psychometric characteristics in a Spanish adaptation. Psychiatry Res. 93, 247–256.
- Velthorst, E., Nieman, D.H., Linszen, D., Becker, H., de Haan, L., Dingemans, P.M., Birchwood, M., Patterson, P., Salokangas, R.K.R., Heinimaa, M., Heinz, A., Juckel, G., Reventlow, H.G., French, P., Stevens, H., Schultze-Lutter, F., Klosterkötter, J., Ruhrmann, S., 2010. Disability in people clinically at high risk of psychosis. Br. J. Psychiatry 197, 278–284.

4.2. Segundo trabajo titulado “Predictors in use of mental health resources: the role of behaviour problems in patients with severe mental illness”

Este trabajo corresponde al artículo publicado que se referencia a continuación:

Bellido-Zanin, G., Vázquez-Morejón, A. J., Martín-Rodríguez, A., & Pérez-San-Gregorio, M. Á. (2017). Predictors in use of mental health resources: The role of behaviour problems in patients with severe mental illness. *International Journal of Social Psychiatry*, 63 (6), 532-538. http://dx.doi.org//10707/2002706746400177116696797

Abstract

Background: In recent years, more variables are being included in the use of mental health resource prediction models. Some studies have shown that how well the patient can function is important for this prediction. However, the relevance of a variable as important as behaviour problems has scarcely been explored.

Aim: This study attempted to evaluate the effect of behaviour problems in patients with severe mental illness on the use of mental health resources.

Method: One hundred and eighty-five patients at a Community Mental Health Unit were evaluated using the Behaviour Problem Inventory. Later a bivariate logistic regression was done to identify what behaviour problems could be specific predictors of use of mental health resources.

Results: The results showed that the general index of behaviour problems predicts both use of hospitalization resources and outpatient attention. Underactivity/social withdrawal is the best predictor of all the different areas. Conclusions: These results confirm the role of behavior problems as predictors of the use of mental health resources in individuals with a severe mental illness.

Declaration of interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Acknowledgment: We are grateful to all the professionals working at the Guadalquivir Community Mental Health Unit

Key words: schizophrenic disorders; bipolar disorder; behavior problems; hospital admissions; community services

Introduction

Several different mental disorders (schizophrenia, bipolar disorder, severe depressive disorder and other psychotic disorders) are grouped together under the term Severe Mental Illness. Those who suffer from them may experience very diverse symptoms, and share the same diagnosis, even though they are quite different from each other. The only common denominator seems to be a significant effect on functioning and social adaptation (American Psychiatric Association (APA), 2013). Some authors have proposed using this criterion to understand severe mental illness better by developing instruments able to relate behaviour variables observed to social functioning (Carpenter & Strauss, 1991). Two main approaches have derived from this criterion, one concentrating on social functioning (Birchwood, Smith, Cochrane, Wetton, & Copestake, 1990) and the other related to behaviour problems that interfere with social integration (Wykes & Sturt, 1986).

Individuals who suffer from a severe mental disorder require intense use of mental health resources to be able to function well socially and reduce their limitations due to their behaviour problems as far as possible (Knapp, Mangalore, & Simon, 2004), thereby increasing the cost of their care above other types of mental disorders (Andrews, Issakidis, Sanderson, Corry, & Lapsley, 2004; Carr et al., 2003; Somaiya, Grover, Avasthi, & Chakrabarti, 2014).

Previous studies have attempted to determine what variables influence the extent to which mental health resources are used by persons with mental disorders. These studies have mainly explored socioeconomic variables such as age (Jin et al., 2003), gender (Lindamer et al., 2003; Usall et al., 2012), ethnic group (Lee, Laiewski, & Choi, 2014; Mann, Fisher, & Johnson, 2014), socioeconomic status (Kilian, Matschinger, Becker, & Angermeyer, 2003;

Tello et al., 2005) or education (Donisi et al., 2013; Have, Oldehinkel, Vollebergh, & Ormel, 2003; Jin et al., 2003; Kilian et al., 2003; Lindamer et al., 2003; Tello et al., 2005; Usall et al., 2012).

Later studies have added to the number of variables included, such as those related to urban context and neigh-bourhood (Donisi et al., 2013; Ngamini Ngui, Perreault, Fleury, & Caron, 2012) and other clinical variables (Moreno-Kustner et al., 2011), leading to a more complete vision of what determines use of mental health resources. Finally, the most recent studies have started to include social functioning variables (Bellido-Zanin, Pérez-San-Gregorio, Martín-Rodríguez, & Vázquez-Morejón, 2015; Raudino et al., 2014), providing relevant data for predicting the use of these resources.

It would therefore be of interest to study the role of behaviour problems in predicting the use of mental health resources, as it would explore another side of social adaptation and what it contributes to prediction of these resources.

Previous studies have attempted to determine the most relevant behaviour problems in psychotic disorders. Four behavioural factors were found in schizophrenia in a study (Harvey, Curson, Pantelis, Taylor, & Barnes, 1996) that was later replicated and confirmed (Curson, Duke, Harvey, Pantelis, & Barnes, 1999). Those four factors, found using the Social Behaviour Schedule (Wykes & Sturt, 1986), were thought disturbance, social withdrawal, depression behaviour and antisocial behaviour. This new perspective in understanding the different components of psychotic disorders made it possible to study community adaptation of patients with this diagnosis (Cella et al., 2014).

As far as the authors know, there has been no research to date including this variable in mental health resource prediction models, so this is intended as an exploratory study on the subject.

This study attempted to determine the influence that behaviour problems of patients with severe mental illness has on the use of mental health resources. Our hypothesis is the following:

- Behaviour problems on patients with severe mental illness are positively associated with a higher use of mental health services.

Method

Subjects

The sample comprised 185 patients who received care at a Community Mental Health Unit (CMHU) and were diagnosed with a severe mental disorder: schizophrenia (F. 20 according to the International Classification of Diseases, 10th edition (ICD-10)), other psychotic spectrum disorders (F.21–F.29 according to ICD-10), bipolar disorder Type 1 (F.31 according to ICD-10) and severe depression disorder (F.32 according to ICD-10).

The sample was selected by convenience sampling in which the patients in a psychoeducation programme given in the CMHU were asked to participate in the evaluation. All of them accepted.

The clinical psychologist or psychiatrist responsible for each patient made the diagnosis using a clinical interview. The criteria for inclusion in the study were that they had to (1) be under treatment in the CMHU at the time of the study, (2) have one of the diagnoses mentioned above, (3) be 18–65 years of age and (4) give their consent to participating in the study. Exclusion criteria were primary diagnosis of substance use disorder or mental retardation.

Instruments and measures

- Behaviour Problem Inventory. The scale comprises 14 items which contain the most relevant behaviour problems found in individuals with

psychosis. The main purpose of the scale is to evaluate behaviour problems observed in patients with a severe mental disorder quickly and effectively. The items were based on a review of prior instruments, such as the Social Behaviour Schedule (Wykes & Sturt, 1986), the REHAB (Baker & Hall, 1988) and the PC section of the Social Behaviour Assessment Schedule (SBAS) (Platt et al., 1980) combined with the clinical and research experience of the authors themselves. The criterion followed was that each item be insofar as possible an observable behaviour. All answers refer to the patient's behaviour during the past 3 months.

- Mental health resource use measures. Resource use variables were found using data available in the Andalusian Healthcare System's computerized records of every patient's contacts with mental health services. Two variables were included: one related to outpatient visits, that is, the total number of CMHU interventions. The CMHU is a community outpatient resource where there is a variety of mental health professionals (psychiatrists, clinical psychologists, social workers and nurses) specialized in all types of mental health disorders. The other was hospital admissions in the Inpatient Unit during the follow-up period. The rest of the resources (the Mental Health Therapeutic Community and the Mental Health Rehabilitation Unit) were excluded due to the small number of patients in the sample using them during the follow-up period. None of the patients were referred to the Mental Health Therapeutic Community and only six patients in the sample were referred to the Mental Health Rehabilitation Unit. Nevertheless, patients who use these kinds of resources were not excluded of the sample.

Procedure

After giving their informed consent, the Behaviour Problems Inventory was

administered to the patients' main caregiver. Later, each patient whose relative had filled in the questionnaire was followed up for 36 months after evaluation. Each contact with the mental health services was collected by means of its identity number in the computerized records of the Andalusian Healthcare System as described under section 'Instruments and measures'.

Statistical analysis

Statistical analysis was done using the SPSS v.22 statistical package:

- A descriptive analysis of the type and amount of resources needed by the patients during the 36-month follow-up period.
- Logistic regression analysis was used to identify significant predictors of a more intensive use of resources, as the data collected did not fulfil the requirements for linear regression. The two dependent variables were therefore dichotomized to fit to the logistic regression criteria. The measure of the hospital admission variable was whether there had been admission after assessment. Appointments at the CMHU were reclassified according to sample distribution into one group under the 50th percentile with average care of fewer than one contact per month and another group above that percentile with more than one contact per month. This decision was made on the basis of statistical (the variable did not meet the basic assumptions of normality and homoscedasticity for linear regression analysis) and clinical criteria by which more than one contact per month could show a high level of assistance in the Andalusian Healthcare System. Two analyses were made per resource, the first using the SBP and MBP scores and the other with each of the Behaviour Problem Inventory subscales.

Results

Descriptive analysis

The average age of the sample was 37.63 years (SD = 9.71; range = 17–56); 114 of whom were males (61.6%) and 77 females (38.4%). Most participants were single (N = 143, 77.3%), 26 were married (14.1%) and the rest separated or widowed (9.6%). A total of 102 participants were diag-nosed with schizophrenia (55.1%), 53 with other psy-chotic disorders (28.7%), 25 with bipolar affective disorder (13.5%) and 5 with severe depressive disorder (2.7%).

Table 1 shows the descriptive analysis of sociodemographic data.

TABLE 1. Descriptive analysis of sociodemographic data of the patients who participated in the study (n = 185).

Variables	n	%
Sex		
Women	114	38.4
Men	71	61.6
Age		
< 26	18	9.7
26-35	51	27.6
36-45	58	31.4
46-55	31	16.8
56-65	27	14.6
Marital Status		
Single	143	77.3

Married	26	14.1
Separated	13	7
Widowed	3	1.6
Education		
Incomplete primary school	25	13.4
Primary school	45	24.3
Secondary/grade school	65	35.1
College/university	37	2
Unknown	13	7
Diagnosis		
Schizophrenia	102	55.1
Other psychotic disorder	53	28.7
Bipolar disorder	25	13.5
Severe depressive disorder	5	27

Table 2 shows the results of the descriptive analysis of resource use during the 36-month follow-up period. All the patients were in contact with the Community Mental Health Unit during the three years of follow-up while only a small percentage had any hospital admission during the first, second or third year.

TABLE 2. Descriptive analysis of the use of mental health resources during the 36-month follow-up period (n = 185).

Type of resource	No. of patients who made use of the	% of patients who made use of the unit	M of contacts	SD of contacts

	unit				
1ST YEAR CMHU	185	100	17.44	16.35
2ND YEAR CMHU	185	100	14.89	17.15
3RD YEAR CMHU	185	100	13.67	17.14
1ST YEAR IU	13	7	1.54	1.13
2ND YEAR IU	12	6.5	1.33	.65
3RD YEAR IU	11	5.9	1.64	1.03

CMHU: community mental health unit, IU: impatient unit, M: mean; SD: standard deviation.

Table 3 shows the results of the descriptive analysis of the various Behaviour Problem Inventory subscales and item by item.

TABLE 3. Descriptive analysis of data on behaviour problems collected from the Behaviour Problem Inventory (n = 185).

	M	SD
Moderate Behaviour problems score	3.69	3.07
Severe Behaviour problems score	1.32	2.17
Underactivity/social withdrawal subscale	5.6	3.84
Active problems subscale	4.08	3.72
Lack of impulse control subscale	0.95	1.85

Mental health resource use predictors

Table 4 shows the MBP and the SBP scores and the Behavioural Problems subscales as predictors of the various mental health resources during 3 years. It may be observed in the table that the SBP score was a good predictor of appointments at the CMHU during the first year ($p = .017$) and hospital admissions once or more during the first year ($p = .010$) and the second year ($p = .054$), while the rest of resources were not significant. Similarly, the MBP score predicted appointments at the CMHU during the first year ($p = .010$), second year ($p = .035$) and third year ($p = .031$). It also predicted hospital admissions during the first year ($p = .022$), the second year ($p = .024$) and the third year ($p = .014$). The variance explained by the model using the Nagelkerke measure represents from 3.2% to 8.8%, which is a small proportion of little or moderate variance. The most variance explained is in predicting hospitalization during the first year (8.8%).

The Underactivity/Social Withdrawal Subscale predicted appointments at a CMHU in both the first ($p = .002$) and second year ($p = .036$). This Underactivity/Social Withdrawal Subscale also satisfactorily predicted hospital admissions during the first year ($p = .016$). Hospital admissions in the second year, however, were predicted by the Active Problems Subscale ($p = .024$).

The variance explained by the model using the Nagelkerke measure represents from 3.1% to 7.8%, which is a small proportion of little or moderate variance, again highest in hospitalization during the first year where the variance explained is 7.8%.

TABLE 4. Severe (SBP), moderate behaviour problems (MBP) scores and Behaviour Problems subscales as a predictor of other types of resources (n =

185).

	OR	95% CI	*p*
1st YEAR appointments at CMHU			
SBP (R2 Nagelkerke = .040)	1.185	1.023–1.373	.017
MBP (R2 Nagelkerke = .048)	1.136	1.029-1.254	.010
2nd YEAR appointments at CMHU			
SBP (R2 Nagelkerke = .015)	1.104	.964-1.265	.149
MBP (R2 Nagelkerke = .032)	1.108	1.006-1.221	.035
3RD YEAR appointments at CMHU			
SBP (R2 Nagelkerke = .007)	1.070	.934-1.225	.330
MBP (R2 Nagelkerke = .034)	1.113	1.009-1.227	.031
1ST YEAR hospital admissions			
SBP (R2 Nagelkerke = .088)	.1.297	1.077–1.561	.010
MBP (R2 Nagelkerke = .070)	1.216	1.032-1.434	.022
2ND YEAR hospital admissions			
SBP (R2 Nagelkerke = .052)	1.232	1.013-1.499	.054

MBP (R2 Nagelkerke = .071)	1.220	1.030-1.447	.024
3RD YEAR hospital admissions			
SBP (R2 Nagelkerke = .002)	1.047	.810-1.353	.735
1ST YEAR appointments at the CMHU		1.009-1.089	.014
Underactivity/social withdrawal subscale (R2 Nagelkerke = .069)	1.132	1.045-1.226	.002
2nd YEAR appointments at the CMHU			
Underactivity/social withdrawal subscale (R2 Nagelkerke = .031)	1.085	(1.004-1.173)	.036
1st YEAR hospital admissions			
Underactivity/social withdrawal subscale (R2 Nagelkerke = .078)	1.191	1.032-1.374	.016
2nd YEAR hospital admissions			
Active problems subscale (R2 Nagelkerke = .071)	1.176	1.025-1.349	.024

CMHU: community mental health unit. SBP: severe behaviour problems, MBP: moderate behaviour problems

Discussion

This study was intended to examine the role of behaviour problems in predicting the use of mental health resources in the population with severe

mental illness. The data found in this study generally confirm the hypothesis of our research, underlining the importance of behaviour problems as predictors of these resources.

In the first place, it may be observed how the general indicators of behaviour problems, such as the MBP and SBP indices, were predictors of most of the mental health resources during the 36-month follow-up.

Specifically, the MBP score was more effective in predicting most of the mental health resources, with higher explained variance. The only exception to this was hospital admissions during the first 12 months of follow-up, in which the variance explained was higher for the SBP score.

These results seem to be in agreement with the nature of the Inpatient Unit itself, which is mainly for occasional admission of patients whose situation is more severe, such as decompensation or attempted suicide. Another possible explanation has been argued by previous studies which have found similar results (Moreno-Kustner et al., 2011) associating the lowest levels of social adaptation, which in this study could be likened to more behaviour problems, with less adherence to mental health services.

In addition to the overall behaviour problem subscales, it would seem relevant to study specifically what types of behaviour problems could predict each of the mental health resources studied, because the behaviour problems a patient with severe mental illness has could vary considerably (Wykes & Sturt, 1986).

This new analysis shows how the Underactivity/Social Withdrawal Subscale is the best predictor of more appointments at the CMHU during the first 2 years and hospital admissions during the first year. Nevertheless, the Active Problems Subscale seems to predict hospital admissions better during the second year of follow-up. None of the subscales were found to be able to predict contacts with mental health resources during the third year.

The consistency shown by the Underactivity/Social Withdrawal Subscale seems coherent with previous studies, which have attempted to determine predictors of the course of psychotic disorders. Several authors have found the importance of negative symptoms for predicting the course of illness (Breier, Schreiber, Dyer, & Pickar, 1991; Sipos, Harrison, Gunnell, Amin, & Singh, 2001) and have also demonstrated how social isolation, which would be related to the Underactivity/Social Withdrawal Subscale, is also an important predictor of the course of illness (Harvey, Jeffreys, McNaught, Blizard, & King, 2007) and the use of mental health resources (Raudino et al., 2014).

The only case in which the Underactivity/Social Withdrawal Subscale was not the best predictor was for hospital admissions during the second year. Again in the case of use of the Inpatient Unit, it seems that the Active Problems Subscale, which could correspond to positive symptomatology in psychosis, was a better predictor, coinciding with the need for hospitalization for decompensation.

In conclusion, it seems that behaviour problems, and especially the underactivity/social withdrawal area, are good predictors of the need for mental health resources of patients with mental disorders. The variance explained is low or moderate, but these results are in line with those that show that the variables predicting resource use are many and varied, from sociodemographic variables (Donisi et al., 2013; Jin et al., 2003; Mann et al., 2014; Usall et al., 2012) to clinical (Moreno-Kustner et al., 2011).

One of the limitations of this study is precisely the inclusion of a single variable and not others such as sociodemographic or clinical. However, the role of those variables has been well studied before, so this study would only have found results similar to those observed previously.

Another possible limitation of the study is that the Behaviour Problem Inventory was filled out only by the main caregiver. Although main caregivers

have turned out to be generally good informants (Sabbag et al., 2011), it is true that it would be of interest to check the information provided by other informants, for example, the patient's clinical referrer or the patient, since the information could vary.

In future studies, other health resources could be included as variables, such as primary attention appointments or house calls, which have been included in other studies (Raudino et al., 2014), for a more complete image of all the resources that each patient could require based on their behaviour problems.

Finally, it is worth mentioning one strong point of this research, which is the 3-year-long follow-up of our sample. Most studies on use of resources are cross-studies or have a shorter follow-up (Donisi et al., 2013; Moreno-Kustner et al., 2011; Raudino et al., 2014) so the inclusion of data for 36 months after evaluation may be considered confirmation of the long-term consistency of the results.

This study has shown the need to increase the number of variables included in current mental health resource use prediction models for patients with severe mental illness and the importance of also including behaviour problems as a variable in such models. Extending mental health resource use prediction models could facilitate more effective health service planning. Furthermore, in the future, it would be of great interest to develop evaluation instruments, such as the Behaviour Problem Inventory, for short, easy application, enabling fast, effective planning of the resources any patient with a severe mental disorder in particular may need.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

- Andrews, G., Issakidis, C., Sanderson, K., Corry, J., & Lapsley, H. (2004). Utilising survey data to inform public policy: Comparison of the cost-effectiveness of treatment of ten mental disorders. *British Journal of Psychiatry*, *184*, 526– 533. doi:10.1192/bjp.184.6.526.
- Baker, R., & Hall, J. N. (1988). REHAB: a new assessment instrument for chronic psychiatric patients. *Schizophrenia Bulletin, 14*, 97.
- Bellido-Zanin, G., Pérez-San-Gregorio, M. Á., Martín-Rodríguez, A., & Vázquez-Morejón, A. J. (2015). Social functioning as a predictor of the use of mental health resources in patients with severe mental disorder. *Psychiatry Research*, *230*, 189–193.
- Birchwood, M., Smith, J., Cochrane, R., Wetton, S., & Copestake, S. (1990). The social functioning scale – The development and validation of a new scale of social-adjustment for use in family intervention programs with schizophrenic-patients. *British Journal of Psychiatry*, *157*, 853–859. doi:10.1192/ bjp.157.6.853
- Breier, A., Schreiber, J. L., Dyer, J., & Pickar, D. (1991). National institute of mental health longitudinal study of chronic schizophrenia – Prognosis and predictors of out-come. *Archives of General Psychiatry*, *48*, 239–246.
- Carpenter JR, W. T., & Strauss, J. S. (1991). The Prediction of Outcome in Schizophrenia IV: Eleven-Year Follow-Up of the Washington IPSS Cohort. *The Journal of Nervous and Mental Disease*, *179*, 517-525.
- Carr, V. J., Johnston, P. J., Lewin, T. J., Rajkumar, S., Carter, G. L., & Issakidis, C. (2003). Patterns of service use among persons with schizophrenia and other psychotic disorders. *Psychiatric Services*, *54*, 226–235. doi:10.1176/appi. ps.54.2.226.
- Cella, M., Stratta, P., Chahal, K., Huddy, V., Reeder, C., & Wykes, T. (2014). Measuring community functioning in schizophrenia with the

Social Behaviour Schedule. *Schizophrenia Research, 153*, 220–224. doi:10.1016/j. schres.2013.12.016

- Curson, D. A., Duke, P. J., Harvey, C. A., Pantelis, C., & Barnes, T. R. E. (1999). Four behavioural syndromes of schizophrenia: A replication in a second inner-London epidemiological sample. *Schizophrenia Research, 37*, 165–176. doi:10.1016/ s0920-9964(98)00151-0
- Donisi, V., Tedeschi, F., Percudani, M., Fiorillo, A., Confalonieri, L., De Rosa, C., ... Amaddeo, F. (2013). Prediction of community mental health service utilization by individual and ecological level socio-economic factors. *Psychiatry Research, 209*, 691–698. doi:10.1016/j.psy-chres.2013.02.031
- Harvey, C. A., Curson, D. A., Pantelis, C., Taylor, J., & Barnes, T. R. E. (1996). Four behavioural syndromes of schizophrenia. *British Journal of Psychiatry, 168*, 562–570. doi:10.1192/ bjp.168.5.562
- Harvey, C. A., Jeffreys, S. E., McNaught, A. S., Blizard, R. A., & King, M. B. (2007). The Camden Schizophrenia Surveys III: Five-year outcome of a sample of individuals from a prevalence survey and the importance of social relation-ships. *International Journal of Social Psychiatry, 53*, 340– 356. doi:10.1177/0020764006074529
- Have, M. T., Oldehinkel, A., Vollebergh, W., & Ormel, J. (2003). Does educational background explain inequalities in care service use for mental health problems in the Dutch general population? *Acta Psychiatrica Scandinavica, 107*, 178–187.
- Jin, H., Folsom, D. P., Lindamer, L., Bailey, A., Hawthorne, W., Garcia, P., & Jeste, D. V. (2003). Patterns of public mental health service use by age in patients with schizophrenia. *American Journal of Geriatric Psychiatry, 11*, 525–533. doi:10.1176/appi.ajgp.11.5.525
- Kilian, R., Matschinger, H., Becker, T., & Angermeyer, M. C. (2003). A

longitudinal analysis of the impact of social and clinical characteristics on the costs of schizophrenia treatment. *Acta Psychiatrica Scandinavica*, *107*, 351–360. doi:10.1034/j.1600-0447.2003.00072.x

- Knapp, M., Mangalore, R., & Simon, J. (2004). The global costs of schizophrenia. *Schizophrenia Bulletin*, *30*, 279–293.
- Lee, S., Laiewski, L., & Choi, S. H. (2014). Racial-ethnic variation in U.S. mental health service use among Latino and Asian non-U.S. citizens. *Psychiatric Services*, *65*, 68–74. doi:10.1176/appi.ps.201200430
- Lindamer, L. A., Bailey, A., Hawthorne, W., Folsom, D. P., Gilmer, T. P., Garcia, P., ... Jeste, D. V. (2003). Gender differences in characteristics and service use of public mental health patients with schizophrenia. *Psychiatric Services*, *54*, 1407–1409. doi:10.1176/appi.ps.54.10.1407
- Mann, F., Fisher, H. L., & Johnson, S. (2014). A systematic review of ethnic variations in hospital admission and compulsory detention in first-episode psychosis. *Journal of Mental Health*, *23*, 205–211. doi:10.3109/09638237.2014.910641
- Moreno-Kustner, B., Mayoral, F., Rivas, F., Angona, P., Requena, J., Garcia-Herrera, J. M., ... Bellon, J. A. (2011). Factors associated with use of community mental health services by schizophrenia patients using multilevel analysis. *BMC Health Services Research*, *11*, 257. doi:10.1186/1472-6963-11-257
- Ngamini Ngui, A., Perreault, M., Fleury, M. J., & Caron, J. (2012). A multi-level study of the determinants of mental health service utilization. *Revue d'Epidemiologie et de Sante Publique*, *60*, 85–93. doi:10.1016/j.respe.2011.09.007.
- Platt, S., Weyman, A., Hirsch, S., & Hewett, S. (1980). The Social

Behaviour Assessment Schedule (SBAS): rationale, contents, scoring and reliability of a new interview schedule. *Social Psychiatry and Psychiatric Epidemiology*, *15*, 43–55.

- Raudino, A., Carr, V. J., Bush, R., Saw, S., Burgess, P., & Morgan, V. A. (2014). Patterns of service utilisation in psychosis: Findings of the 2010 Australian National Survey of Psychosis. *Australian and New Zealand Journal of Psychiatry*, *48*, 341–351. doi:10.1177/0004867413511996
- Sabbag, S., Twamley, E. M., Vella, L., Heaton, R. K., Patterson, T. L., & Harvey, P. D. (2011). Assessing everyday functioning in schizophrenia: Not all informants seem equally informative. *Schizophrenia Research*, 131, 250–255.doi:10.1016/j.schres.2011.05.003
- Sipos, A., Harrison, G., Gunnell, D., Amin, S., & Singh, S. P. (2001). Patterns and predictors of hospitalisation in first-episode psychosis: Prospective cohort study. *The British Journal of Psychiatry*, *178*, 518–523.
- Somaiya, M., Grover, S., Avasthi, A., & Chakrabarti, S. (2014). Changes in cost of treating schizophrenia: Comparison of two studies done a decade apart. *Psychiatry Research*, *215*, 547–553. doi:10.1016/j.psychres.2014.01.013
- Tello, J. E., Mazzi, M., Tansella, M., Bonizzato, P., Jones, J., & Amaddeo, F. (2005). Does socioeconomic status affect the use of community-based psychiatric services? A south Verona case register study. *Acta Psychiatrica Scandinavica*, *112*, 215–223.
- Usall, J., Iniesta, R., Ochoa, S., Villalta, V., Suarez, D., Pezzimenti, M., ... Millan, J. (2012). Gender differences in the use of mental health services in a Barcelona area. *European Journal of Psychiatry*, *26*, 30–

40.

- Vázquez-Morejón, A. J., Jiménez-García-Bóveda, R., Dorado-García, R., Conde-Díaz, M., Mármol-Pérez, D., Yates-Sosa, F., & Verástegui-Benito, B. (November, 2005). *Problemas de Conducta y Psicosis: Datos preliminares en un estudio llevado a cabo en el Hospital Universitario Virgen del Rocio* [Behavioral Problems and Psychosis: Preliminary data in a study carried out in the Virgen del Rocio University Hospital]. Paper presented at the I Congreso Andaluz de Salud Mental Comunitaria, Granada, Spain.
- Wykes, T., & Sturt, E. (1986). The measurement of social behavior in psychiatric patients: An assessment of the reliability and validity of the SBS schedule. *British Journal of Psychiatry*, *148*, 1–11. doi:10.1192/bjp.148.1.1

4.3. Tercer trabajo titulado "Relationship between behavioral problems and use of mental health services in patients with severe mental illness and the mediating role of the perceived burden of care"

Este trabajo corresponde al artículo publicado que se referencia a continuación:

Bellido-Zanin, G., Vázquez-Morejón, A. J., Pérez-San-Gregorio, M. Á., & Martín-Rodríguez, A. (2017). Relationship between behavioral problems and use of mental health services in patients with severe mental illness and the mediating role of the perceived burden of care. *Psychiatry Research*, 256, 328-333. http://dx.doi.org/10.1016/j.psychres.2017.06.083.

Abstract

Mental health models proposed for predicting more use of mental health resources by patients with severe mental illness are including a wider variety of predictor variables, but there are still many more remaining to be explored for a complete model. The purpose of this study was to enquire into the relationship between two variables, behaviour problems and burden of care, and the use of mental health resources in patients with severe mental illness. Our hypothesis was that perceived burden of care mediates between behaviour problems of patients with serious mental illness and the use of mental health resources. The Behaviour Problem Inventory, which was filled out by the main caregiver, was used to evaluate 179 patients cared for in a community mental health unit. They also answered a questionnaire on perceived family burden. A structural equation analysis was done to test our hypothesis. The results showed that both the behaviour problems and perceived burden of care are good predictors of the use of mental health resources, where perceived burden of care mediates between behaviour problems and use of resources. These variables seem to be relevant for inclusion in complete models for predicting use of mental health resources.

Introduction

In mental health, severe mental illness is defined as psychotic dis-orders lasting for over two years and leading to severe impairment of personal functioning (NIMH, 1987). These disorders are associated with an enormous personal cost for those who suffer from them, but also have significant repercussions on their families (Awad and Voruganti, 2008; Kuipers, 2010; Szkultecka-Debek et al., 2016; Thornicroft and Tansella, 2013) and on the community they live in (Carr et al., 2003). In this respect, and specifically schizophrenia patients, have been found to make high use of healthcare resources, which is associated with high economic cost to society (Chong et

al., 2016; Knapp et al., 2004).

Therefore, many attempts have been made to analyse the use of health-care resources by patients with severe mental illness and find variables which can predict the use of these resources. The purpose of this line of research is to arrive at models of these predictors that are as complete as possible and plan the specific mental-health resources necessary to care for patients effectively and efficiently.

In these mental-health resource prediction models, several previous studies have determined the importance of sociodemographic variables, such as age (Jin et al., 2003) or gender (Usall et al., 2012) and others have included more clinical variables, such as diagnosis (Moreno-Kustner et al., 2011). Although relevant, these variables may lack specificity since the same diagnosis may be manifested in different ways in different persons (APA, 2013). Therefore, a predictor such as diagnosis provides few clues as to the specific problems of patients that influence greater use of resources. With this argument, the latest studies have started to introduce a wider range of variables, such as social functioning (Bellido-Zanin et al., 2015) and behaviour problems (Raudino et al., 2014).

Study of behaviour problems in severe mental illness such as schizophrenia and other psychotic disorders emerges from the need to develop measures able to provide information on the adaptation by individuals with severe mental illness to their social setting (Carpenter and Strauss, 1991; Wykes and Sturt, 1986). Behaviour problems are intended to be a more objective and observable approach than classic symptoms, which are sometimes hard to be objective about. Harvey et al. (1996) proposed a model of four broad classes of behaviour problems which was later replicated and confirmed (Curson et al., 1999). Some of the few studies on behaviour problems as variables predicting

the use of resources show social isolation to be the most relevant predictor variable (Raudino et al., 2014).

However, to our knowledge, no previous study has attempted to explore the processes involved in the relationship between behaviour problems and use of resources to find out why behaviour problems influence the use of mental-health resources or what other variables may be involved in this prediction.

Since the process of deinstitutionalization in which patients with severe mental illness have gone from living in psychiatric hospitals to communities, there has been growing interest in studying the burden of care and what variables contribute to increasing it.

The behaviour problems of patients with severe mental illness have been one of the variables mentioned, along with symptomatology, as predictors of a heavier perceived burden of care (Boye et al., 2001; Wolthaus et al., 2002), which would indicate that the families of patients with stronger behaviour problems could be overwhelmed by home caregiving.

However, burden of care is not only associated with the patient's characteristics but also with the characteristics of the family itself. Expressed emotion, a variable including overinvolvement and criticism of the patient by family members correlates positively with a heavier burden perceived by family members (Carra et al., 2012).

Expressed emotion has also been shown to be a reliable predictor of the progress of patients with schizophrenia associated with a higher percentage of relapse (Hanzawa et al., 2013; Moller-Leimkuhler and Wiesheu, 2012). Thus some authors have suggested that a reduction in the burden of care could lead to better progress of patients with mental disorders (Sono et al., 2012) with fewer relapses and less hospitalisation. As burden of care is observed to be

related to progress of the disorder, it would be appropriate to wonder whether it could also be related to heavier use of mental health resources. A previous study has observed such a relationship between caregiver characteristics and the use of mental-health resources (Smith, 2003).

This study attempted to enquire into the relationship between these two variables (behaviour problems and perceived burden of care) and the use of mental health resources by patients with mental disorders. It specifically tried to test the following hypotheses:

- A heavier perceived burden of care is a predictor of more use of resources by patients with severe mental illness.
- The perceived burden of care mediates the relationship between behaviour problems and use of resources by patients with severe mental illness such that perceived burden of care strengthens the relationship between behaviour problems and use of mental health resources.

Method

Subjects

The sample was comprised of 179 patients who were received at a community mental health unit (CMHU) and were diagnosed with a severe mental illness: schizophrenia (F. 20 according to ICD-10), other psychotic spectrum disorders (F.21–F.29 according to ICD-10) and bi-polar disorder Type 1 (F.31 according to ICD-10). The sample was selected by convenience sampling, from participants in family psychoeducation group programs routinely carried out at the CMHU. All of the patients agreed to participate in the evaluation.

The diagnosis was made by the clinical psychologist or psychiatrist responsible for each patient using a clinical interview. The criteria for inclusion in the

study were 1) be under treatment in the CMHU at the time of the study, 2) have one of the diagnoses mentioned above, 3) be 18–65, and 4) give their consent to participating in the study. Exclusion criteria were a primary diagnosis of substance use disorder or mental retardation.

Instruments and measures

- *Behaviour Problem Inventory*

The scale is comprised of 14 items, which enumerate the most re-levant behaviour problems found in individuals with psychosis. The instrument was designed mainly for evaluating behaviour problems observed in patients with severe mental illness quickly and effectively. The items were based on a review of other instruments, such as the Social Behaviour Schedule (Wykes and Sturt, 1986), the REHAB (Baker and Hall, 1988) and the PC section of the Social Behaviour Assessment Schedule (SBAS) (Platt et al., 1980) combined with the clinical and research experience of the authors themselves. The criterion followed was that each item be, insofar as possible, an observable behaviour. All answers refer to the patient's behaviour during the past three months. A total score is found from the sum of the scores on each of the 14 items, and those on the three subscales (identified by factor analysis): 1) Underactivity/social withdrawal, 2) Active problems and 3) Lack of impulse control. Another two scores are also found: 1) Moderate behaviour problem score (MBP) equal to the number of items with a score over 2 and 2) Severe behaviour problem score (SBP), equal to the number of items with a score of 3. Higher scores on each scale and index show greater presence of behaviour problems in the patient evaluated. Preliminary psychometric data on the scale (Vázquez Morejón et al., 2005) confirm that scale characteristics are adequate, and the final adaptation of the instrument is now in press. The Cronbach's alpha calculated for the sample in this study was 0.82. In this study, five

measures were included in this instrument, the three main subscales plus the severe and moderate behaviour problems indices.

- *Perceived burden of care*

Perceived burden of care was made operable using two questions, where Burden of care 1 was "Do you feel you can bear the illness and the problems it causes?" (from 0 (no) to 4 (well)) and Burden of care 2 was "How often do you feel overwhelmed by the problems of the illness?" (from 0 (Never) to 4 (Often)). These two questions were added to the List of Behaviour Problems.

- *Mental health resource use measures:*

Resource use variables were found using data available in the Andalusian healthcare system's computerized records. These records contain all the contacts of every patient with the mental health services.

Variables related to outpatient visits: total number of CMHU interventions. The CMHU is a community outpatient resource with a variety of mental health professionals (psychiatrists, clinical psychologists, social workers and nurses) specialized in all kind of mental health disorders.

Procedure

After acquiring their informed consent, the families of the patients with severe mental illness filled out the List of Behaviour Problems and the two items related to perceived burden of care, as well as other evaluation instruments routinely included for evaluation in the psychoeducational programme.

Later, each patient whose relative had filled in the questionnaire was followed up for 36 months from evaluation. Each contact with the mental health services described under Instruments was collected by means of its identity number in the computerized records of the Andalusian health system.

Data analysis

X^2 , *RMSEA* and *CFI* were used to evaluate the fit of the models analysed. The recommended cut-off points were *RMSEA* ≤.08 (Brown and Cudek, 1993) and *CFI* ≥.90 (Bollen, 1989). The structural equation models were constructed using *MPLUS 7* with FIML for lost data. Mediation was analysed using bootstrapping. Based on this procedure, an indirect effect is considered significant when at the 95% interval it does not contain 0 (Mackinnon et al., 2002). Aside from this, correlation and descriptive analyses were carried out using *SPSS 23*.

Results

Descriptive analyses

The sample's sociodemographic data were as follows: Average participant age was 37.21 years (SD = 9.02; range = 18-55) distributed among 116 males (64.8%) and 63 females (35.2%). Most participants were single (N = 147, 82.1%), 16 married (8.9%) and the rest separated or widowed (7.8%). 102 participants were diagnosed with schizophrenia (56.9%), 55 with other psychotic disorders (30.7%), 22 with bipolar Type 1 disorder (12.3%).

Table 1. Descriptive

	N	Minimum	Maximum	Mean	SD
BPI1	174	.00	3.00	1.57	1.07
BPI2	174	.00	3.00	0.85	1.05
BPI3	175	.00	3.00	1.38	1.04
BPI4	176	.00	3.00	1.23	1.07
BPI5	175	.00	3.00	0.70	1.05
BPI6	176	.00	3.00	0.57	0.92

BPI7	175	.00	3.00	0.35	0.79
BPI8	174	.00	3.00	0.10	0.42
BPI9	174	.00	3.00	0.37	0.72
BPI10	174	.00	2.00	0.08	0.35
BPI11	175	.00	3.00	0.82	1.06
BPI12	174	.00	3.00	0.49	0.85
BPI13	174	.00	3.00	0.41	0.86
BPI14	174	.00	3.00	1.21	1.13
BC 1	166	.00	4.00	2.69	1.04
BC 2	166	.00	4.00	1.76	1.07
NA yr 1	179	.00	91.00	17.68	17.14
NA yr 2	179	.00	142.00	17.11	18.60
NA yr 3	179	.00	163.00	17.89	23.15

BPI: behavioural problems inventory; BC: perceived burden of care; NA: number of appointments in the year.

Table 1 shows the analyses of each of the variables in the analysis (behaviour problems, coping and number of appointments). It may be observed that the means of items referring to behaviour problems varied considerably from 0.08 to 1.57. The mean of 2.69 for Burden of care 1 was higher than the mean of burden of care 2, which was 1.76. The number of appointments remained relatively stable over the years in 17, although the standard deviation shows wide variability among patients.

Normality test

As shown in Table 2, all the items showed normality problems, based on their standardised skewness and kurtosis.

Table 2. Skewness and kurtosis of study variables

Skewness		Kurtosis		Skewness and Kurtosis	
Variable	*Z*-Score	*P*-Value	*Z*-Score	*P*-Value	Chi-Square	*P*-Value
BPI1	-1.605	0.109	-7.001	0.000	51.594	0.000
BPI2	3.733	0.000	-3.664	0.000	27.356	0.000
BPI3	-0.108	0.914	-7.379	0.000	54.461	0.000
BPI4	1.086	0.277	-8.960	0.000	81.458	0.000
BPI5	5.248	0.000	0.247	0.805	27.605	0.000
BPI6	5.704	0.000	1.319	0.187	34.277	0.000
BPI7	7.650	0.000	4.363	0.000	77.554	0.000
BPI8	10.651	0.000	7.398	0.000	168.182	0.000
BPI9	6.892	0.000	3.430	0.001	59.257	0.000
BPI10	11.037	0.000	7.610	0.000	179.733	0.000
BPI11	3.575	0.000	-4.891	0.000	36.705	0.000
BPI12	6.631	0.000	3.159	0.002	53.951	0.000
BPI13	7.415	0.000	3.935	0.000	70.469	0.000
BPI14	1.534	0.125	-13.500	0.000	184.601	0.000
BC1	-3.542	0.000	0.787	0.431	13.166	0.001
BC2	0.380	0.704	-1.574	0.116	2.622	0.270
NAYr1	6.770	0.000	4.550	0.000	66.538	0.000
NAYr2	6.735	0.000	4.438	0.000	65.055	0.000
NAYr3	9.148	0.000	6.641	0.000	127.787	0.000

BPI: behavioural problems inventory; BC: perceived burden of care; NAyr: number of appointments in the year.

In addition, multivariate normality was tested, finding that this assumption was not met, since Mardia's test (1980) was significant at 95%. It was therefore decided to use *Means and Variance Adjusted Weighted Least Squares* (WLSMV), in which the Behavior Problems and Burden of care 1 and 2 variables were categorical.

Correlations

Then the relationship among the three types of behaviour problem, Burden of cares 1 and 2 and appointments in Years 1, 2 and 3 (see Table 2) was analysed.

Observing the correlations, it seems clear that underactivity/social withdrawal, active and disorganised behaviour problems are related to Burden of cares 1 and 2, and in turn, Burden of care 2 was related to the number of appointments in years 1, 2 and 3 (in Year 1 there was also a relationship with Burden of care 1), although that relationship decreased over time. Underactivity/social withdrawal behaviour problems were also observed to be associated with appointments in Year 1 and Year 2.

Table 3. Correlations

		USW	AP	LIC	BC1	BC2	NAyr1	NAyr2	NAyr3
	r	1.000	0.647**	0.304**	-0.338**	0.477**	0.240**	0.210**	0.100
USW	*p*	.	0.000	0.000	0.000	0.000	0.002	0.006	0.193
	n	170	170	169	160	161	170	170	170
	r	0.647**	1.000	0.476**	-0.254**	0.433**	0.095	0.079	0.117
AP	*p*	0.000	.	0.000	0.001	0.000	0.217	0.301	0.125
	n	170	172	171	162	163	172	172	172
	r	0.304**	0.476**	1.000	-0.236**	0.300**	0.019	0.041	0.070
LIC	*p*	0.000	0.000	.	0.002	0.000	0.801	0.593	0.359
	n	169	171	173	163	163	173	173	173
	r	-0.338**	-0.254**	-0.236**	1.000	-0.492**	-0.221**	-0.023	0.016
BC 1	*p*	0.000	0.001	0.002	.	0.000	0.004	0.766	0.837
	n	160	162	163	166	163	166	166	166
	r	0.477**	0.433**	0.300**	-0.492**	1.000	0.268**	0.205**	0.184*
BC 2	*p*	0.000	0.000	0.000	0.000	.	0.000	0.008	0.017
	n	161	163	163	163	166	166	166	166

NAyr 1	*r*	0.240**	0.095	0.019	-0.221**	0.268**	1.000	0.677**	0.445**
	p	0.002	0.217	0.801	0.004	0.000	.	0.000	0.000
	n	170	172	173	166	166	179	179	179
NAyr 2	*r*	0.210**	0.079	0.041	-0.023	0.205**	0.677**	1.000	0.699**
	p	0.006	0.301	0.593	0.766	0.008	0.000	.	0.000
	n	170	172	173	166	166	179	179	179
NAyr 3	*r*	0.100	0.117	0.070	0.016	0.184*	0.445**	0.699**	1.000
	p	0.193	0.125	0.359	0.837	0.017	0.000	0.000	.
	n	170	172	173	166	166	179	179	179

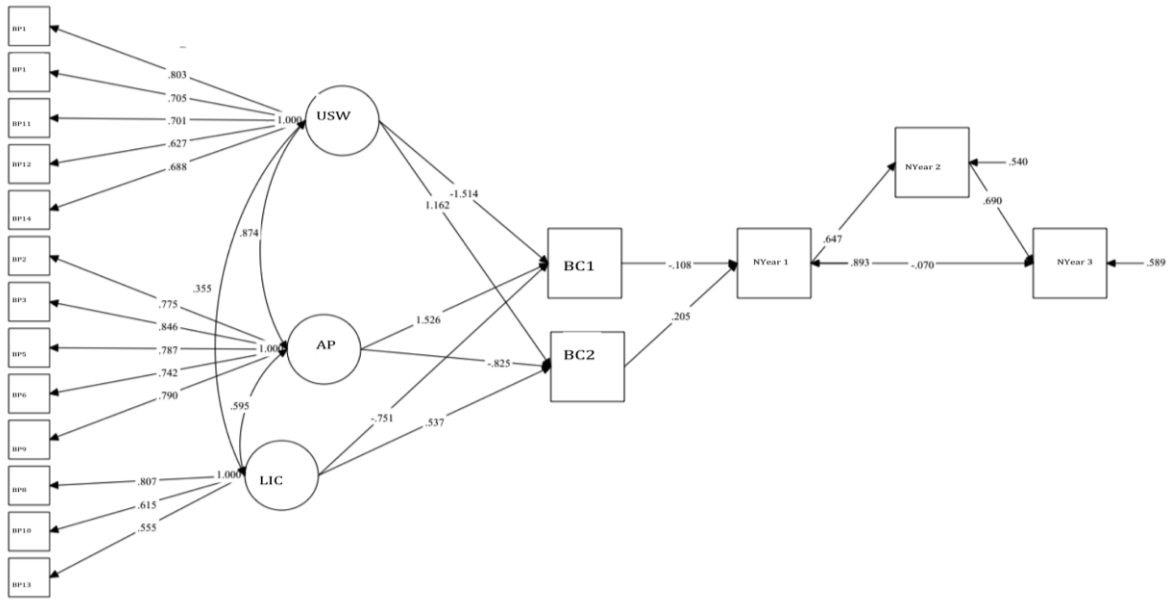
USW: underactivity/social withdrawal; AP: active problems, LIC: lack of impulse control; BC: perceived burden of care; NAyr: number of appointments in the year.

Structural equation model

Before the analysis, the structure of the behaviour problems instrument was checked. Even though the fit indices were adequate [$X^2(74)= 143.92$; *RMSEA*= 0.073; *CFI*= .96], Item 7 had an inadmissible standardised factorial weight (over 1). Therefore, the instrument was tested again after eliminating Item 7. After this, the behaviour problem scale model's fit was good [$X^2(62)= 124.81$; *RMSEA*= .076; *CFI*= 0.95]. After this adaptation, based on the correlations found, a model in which the three behaviour problems impacted on Burden of cares 1 and 2 was tested. Burden of cares 1 and 2 pointed to the number of appointments in Years 1, 2 and 3, where appointments in Year 2 were also influenced by appointments in year 1 and those in Year 3 were influenced by those in Year 2.

The mediation effect was also analysed. That is, the indirect effect of behaviour problems and the number of appointments in Years 1, 2 and 3 through Burden of care 1 and 2.

Figure 1. Diagram of model tested.



Note. All the paths in the figure are standardised and significant.

BPI: behavioural problems inventory; USW: underactivity/social withdrawal; AP: active problems; LIC: lack of impulse control; BC: perceived burden of care; NA: number of appointments in the year.

The resulting model (see Figure 1) confirmed that behaviour problems (all three types) influence Burden of cares 1 and 2. In turn, Burden of cares 1 and 2 influence the number of appointments in Year 1 but not in Years 2 and 3, while number of appointments in Years 2 and 3 was only influenced by appointments in previous years. Model fit was optimum [$X^2(122)= 199.24$; *RMSEA*= 0.059; *CFI*= 0.96].

Finally, bootstrapping was used for mediation, or indirect effects of behaviour problems on number of appointments in Years 1, 2 and 3, because the study was cross-sectional, with 5000 iterations due to the number of variables and sample size of 2443 participants. This analysis confirmed the indirect effects

as: A significant indirect effect of underactivity/social withdrawal behaviour problems on number of appointments in Year 1, through Burden of care 2 *CI*=[0.025; .452], a significant indirect effect of underactivity/social withdrawal behaviour problems on number of appointments in Year 2 through Burden of care 1 and number of appointments in Year 1 *CI*=[0.007; 0.301].

Discussion

The purpose of this study was to find out whether the burden of care variable is related to the use of mental-health resources in patients with severe mental illness and observe whether it mediated in the relationship between patient behaviour problems and their use of mental-health resources. As observed, the results confirm the two hypotheses posed.

The hypothesis that a heavier perceived family load is a predictor of more use of resources by patients with severe mental illness was confirmed. Thus a positive correlation is observed between Burden of care 2 with number of appointments in Years 1, 2 and 3, and a positive correlation between Burden of care 1 and the number of appointments in Year 1. This agrees with previous results which found a relationship between some characteristics of caregivers and use of mental-health resources (Smith, 2003).

These results can also be related to studies which have observed a relationship between caregiver burden and patient progress, e.g., Awad and Voruganti (2008) and Barrio and Yamada (2010), who related it to relapses and number of hospitalisations. Nordstroem et al. (2017) also related burden of care with heavier use of healthcare resources.

The second hypothesis we intended to test was whether perceived burden of care mediated the relationship between behaviour problems and use of resources by patients with severe mental illness, such that the presence of perceived burden of care would strengthen the relationship between behaviour

problems and use of mental-health re-sources. Our hypothesis was confirmed by full mediation between underactivity/social withdrawal problems and the number of appointments in the first and second years, where the mediator was Burden of care Type 2 in appointments in the first year and Burden of care Type 1 and appointments in the first year were mediators in appointments in the second year. None of the other behaviour problems showed a direct correlation or mediated the number of appointments in the first, second or third years.

The underactivity/social withdrawal problems variable seems to be the one that has the most predictive power for use of mental-health resources. Previous studies have found a significant relationship be-tween social isolation and worse prognosis of mental disorders (Harvey et al., 2007). Other studies have also suggested that it is a good predictor of the use of mental-health resources (Raudino et al., 2014). Considering that the underactivity/social withdrawal problems variable includes several items related to social isolation, this coherence be-tween our results and those in previous studies is expectable. In view of the results found it seems plausible to propose a model in which behaviour problems impact on the use of resources to the extent that they lead to a heavier perceived family load.

One limitation of this study is the List of Behaviour Problems, which was filled out only by the main caregiver. Even though caregivers have been shown to be good informers (Sabbag et al., 2011), it would be of interest to complete the information they provide on the behaviour problems of their family members with what other family members or their clinicians can provide.

Another limitation is the instrument for subjective measurement of caregiver load. The two items included to measure this variable are also filled in by the main caregivers, so they represent the burden perceived by caregivers more

than the real burden they may have. As a proposal for lines of future research, it would be of interest to check whether the results found are maintained with an objective measure of burden.

Finally, another limitation of the study is that only community mental-health resources were included in the model, that is, appointments in a community mental-health unit. Other variables, such as the number of hospital admissions or use of other healthcare resources were not included, and it would be of interest to study how the behaviour problem and perceived burden of care affect this variable. Previous studies (Raudino et al., 2014) have demonstrated, for example, the relationship between social isolation and number of hospitalisations, so it would be of interest to try and replicate these results. In the clinical environment it would also be important to develop interventions directed at decreasing perceived burden and at family coping resources.

In conclusion, we would like to emphasize the importance of evaluating behaviour problems and even more so, perceived burden of care with regard to these behaviour problems, because of their relevance in predicting the use of resources.

It seems important to include these variables in predictive resource use models and refine them for strict planning of mental-health services.

References

- American Psychiatric Association, 2013. Diagnostic and Statistical Manual of Mental Disorders: DSM-5. Author, Washington, DC.
- Awad, A.G., Voruganti, L.N.P., 2008. The burden of schizophrenia on caregivers - A review. Pharmacoeconomics 26, 149–162. http://dx.doi.org/10.2165/00019053-200826020-00005.

- Baker, R., Hall, J.N., 1988. REHAB: a new assessment instrument for chronic psychiatric patients. Schizophr. Bull. 14, 97. http://dx.doi.org/10.1093/schbul/14.1.97.
- Barrio, C., Yamada, A.M., 2010. Culturally based intervention development: the case of latino families dealing with schizophrenia. Res. Soc. Work Pract. 20, 483–492. http:// dx.doi.org/10.1177/1049731510361613.
- Bellido-Zanin, G., Ángeles Pérez-San-Gregorio, M., Martin-Rodríguez, A., Vazquez-Morejon, A.J., 2015. Social functioning as a predictor of the use of mental health resources in patients with severe mental disorder. Psychiatry Res. 230, 189–193. http://dx.doi.org/10.1016/j.psychres.2015.08.037.
- Bollen, K.A., 1989. A new incremental fit index for general structural equation models. Socio Methods Res. 17, 303–316. http://dx.doi.org/10.1177/ 0049124189017003004.
- Boye, B., Bentsen, H., Ulstein, I., Notland, T.H., Lersbryggen, A., Lingjaerde, O., et al., 2001. Relatives' distress and patients' symptoms and behaviours: a prospective study of patients with schizophrenia and their relatives. Acta Psychiat. Scand. 104, 42–50. http://dx.doi.org/10.1034/j.1600-0447.2001.00190.x.
- Browne, M.W., Cudeck, R., 1993. Alternative ways of assessing model fit. Sage Focus Ed. 154 (136-136).
- Carpenter, W.T., Strauss, J.S., 1991. The prediction of outcome in schizophrenia .4. 11-year-follow-up of the Washington ipss cohort. J. Nerv. Ment. Dis. 179, 517–525. http://dx.doi.org/10.1097/00005053-199109000-00001.
- Carr, V.J., Johnston, P.J., Lewin, T.J., Rajkumar, S., Carter, G.L., Issakidis, C., 2003. Patterns of service use among persons with

schizophrenia and other psychotic dis-orders. Psych. Serv. 54, 226–235. http://dx.doi.org/10.1176/appi.ps.54.2.226.

- Carra, G., Cazzullo, C.L., Clerici, M., 2012. The association between expressed emotion, illness severity and subjective burden of care in relatives of patients with schizophrenia. Findings from an Italian population. Bmc Psychiatry 12, 8. http://dx.doi. org/10.1186/1471-244x-12-140.
- Chong, H.Y., Teoh, S.L., Wu, D.B.C., Kotirum, S., Chiou, C.F., Chaiyakunapruk, N., 2016. Global economic burden of schizophrenia: a systematic review. Neuropsychiatr. Dis. Treat. 12, 357–373. http://dx.doi.org/10.2147/ndt.s96649.
- Curson, D.A., Duke, P.J., Harvey, C.A., Pantelis, C., Barnes, T.R.E., 1999. Four behavioural syndromes of schizophrenia: a replication in a second inner-London epide-miological sample. Schizophr. Res. 37, 165–176. http://dx.doi.org/10.1016/s0920-9964(98)00151-0.
- Hanzawa, S., Bae, J.K., Bae, Y.J., Chae, M.H., Tanaka, H., Nakane, H., et al., 2013. Psychological impact on caregivers traumatized by the violent behaviour of a family member with schizophrenia. Asian J. Psychiatr. 6, 46–51.
- Harvey, C.A., Curson, D.A., Pantelis, C., Taylor, J., Barnes, T.R.E., 1996. Four behavioural syndromes of schizophrenia. Br. J. Psychiatry 168, 562–570. http://dx.doi.org/10. 1192/bjp.168.5.562.
- Harvey, C.A., Jeffreys, S.E., McNaught, A.S., Blizard, R.A., King, M.B., 2007. The camden schizophrenia surveys III: five-year outcome of a sample of individuals from a pre-valence survey and the importance of social relationships. Int. J. Soc. Psychiatry 53, 340–356. http://dx.doi.org/10.1177/0020764006074529.

- Jin, H., Folsom, D.P., Lindamer, L., Bailey, A., Hawthorne, W., Garcia, P., et al., 2003.Patterns of public mental health service use by age in patients with schizophrenia. Am. J. Geriatr. Psychiatry 11, 525–533. http://dx.doi.org/10.1176/appi.ajgp.11.5.525.
- Knapp, M., Mangalore, R., Simon, J., 2004. The global costs of schizophrenia. Schizophr. Bull. 30, 279–293. http://dx.doi.org/10.1093/oxfordjournals.schbul.a007078.
- Kuipers, E., 2010. Time for a separate psychosis caregiver service? JMH 19, 401–404.http://dx.doi.org/10.3109/09638237.2010.510155.
- MacKinnon, D.P., Lockwood, C.M., Hoffman, J.M., West, S.G., Sheets, V., 2002. A comparison of methods to test mediation and other intervening variable effects. Psychol. Methods 7, 83–104. http://dx.doi.org/10.1037/1082-989X.7.1.83.
- Mardia, K.V., 1980. 9 Tests of unvariate and multivariate normality. Handbook of Statistics, 1, pp. 279–320.
- Moller-Leimkuhler, A.M., Wiesheu, A., 2012. Caregiver burden in chronic mental illness: the role of patient and caregiver characteristics. Eur. Arch. Psychiatry Clin. Neurosci. 262, 157–166. http://dx.doi.org/10.1007/s00406-011-0215-5.
- Moreno-Kustner, B., Mayoral, F., Rivas, F., Angona, P., Requena, J., Garcia-Herrera, J., et al., 2011. Factors associated with use of community mental health services by schizophrenia patients using multilevel analysis. BMC Health Serv. Res. 11. http:// dx.doi.org/10.1186/1472-6963-11-257.
- National Institute of Mental Health, 1987. Towards a Model for a Comprehensive Community-Based Mental Health System. NIMH, Washington, DC.

- Nordstroem, A.L., Talbot, D., Bernasconi, C., Berardo, C.G., Lalonde, J., 2017. Burden of illness of people with persistent symptoms of schizophrenia: a multinational cross-sectional study. Int. J. Soc. Psychiatry 63, 139–150. http://dx.doi.org/10.1177/ 0020764016688040.
- Platt, S., Weyman, A., Hirsch, S., Hewett, S., 1980. The Social Behaviour Assessment Schedule (SBAS): rationale, contents, scoring and reliability of a new interview schedule. Soc. Psychiatry 15, 43–55.
- Raudino, A., Carr, V.J., Bush, R., Saw, S., Burgess, P., Morgan, V.A., 2014. Patterns of service utilisation in psychosis: findings of the 2010 Australian National Survey of Psychosis. Aust. N. Z. J. Psychiatry 48, 341–351. http://dx.doi.org/10.1177/ 0004867413511996.
- Sabbag, S., Twamley, E.M., Vella, L., Heaton, R.K., Patterson, T.L., Harvey, P.D., 2011. Assessing everyday functioning in schizophrenia: not all informants seem equally informative. Schizophr. Res. 131, 250–255. http://dx.doi.org/10.1016/j.schres. 2011.05.003.
- Smith, G.C., 2003. Patterns and predictors of service use and unmet needs among aging families of adults with severe mental illness. Psych. Serv. 54, 871–877. http://dx.doi. org/10.1176/appi.ps.54.6.871.
- Sono, T., Oshima, I., Ito, J., Nishio, M., Suzuki, Y., Horiuchi, K., et al., 2012. Family support in assertive community treatment: an analysis of client outcomes. Community Ment. Health J. 48, 463–470. http://dx.doi.org/10.1007/s10597-011-9444-3.
- Szkultecka-Debek, M., Miernik, K., Stelmachowski, J., Jakovljevic, M., Jukic, V., Aadamsoo, K., et al., 2016. Schizophrenia causes significant burden to patients' and caregivers' lives. Psychiatr. Danub. 28 (2), 104–110.

- Thornicroft, G., Tansella, M., 2013. The balanced care model: the case for both hospital-and community-based mental healthcare. Br. J. Psychiatry 202, 246–248. http://dx. doi.org/10.1192/bjp.bp.112.111377.
- Usall, J., Iniesta, R., Ochoa, S., Villalta, V., Suarez, D., Pezzimenti, M., et al., 2012. Gender differences in the use of mental health services in a Barcelona area. Eur. Psychiatry 26, 30–40. http://dx.doi.org/10.4321/S0213-61632012000100003.
- Vázquez Morejón, A.J., Jiménez Gª-Bóveda, R., Dorado García, R., Conde Díaz, M., Mármol Pérez, D., Yanes Sosa, F., et al., 2005. Problemas de Conducta y Psicosis. Datos preliminares de un estudio en el área Virgen del Rocío de Sevilla. I Congreso Andaluz de Salud Mental Comunitaria. Granada, 16-18 Noviembre.
- Wolthaus, J.E.D., Dingemans, P., Schene, A.H., Linszen, D.H., Wiersma, D., Van den Bosch, et al., 2002. Caregiver burden in recent-onset schizophrenia and spectrum disorders: the influence of symptoms and personality traits. J. Nerv. Ment. Dis. 190, 241–247. http://dx.doi.org/10.1097/01.nmd.0000012872.08131.50.
- Wykes, T., Sturt, E., 1986. The measurement of social-behaviour in psychiatric-patients - An assessment of the reliability and validity of the sbs schedule. Br. J. Psychiatry 148, 1–11. http://dx.doi.org/10.1192/bjp.148.1.1.

5. GLOBAL SUMMARY OF RESULTS

1. Determine the capacity of social functioning and behavior problems of patients with severe mental illness for predicting use of mental health resources.

The following results were found from the study of the relationship between social functioning and the use of mental health resources. The overall social functioning scale was observed to be a good predictor only of the need for one or more hospital admissions (p = .015) during the first 12 months in a mental health hospitalization unit. No significant results were found for the rest of the mental health resource use scales.

Several different results were found with the social functioning subscales. More or less use of appointments in the Community Mental Health Unit of reference by each patient was determined by two subscales, interpersonal behavior, which had an inverse relationship with the number of appointments (p =.005) and prosocial activities, which to a lesser extent, had a direct relationship with a higher number of appointments (p = .036).

The need for admission in the Mental Health Hospitalization Unit during the follow-up had an inverse relationship with the score on the social integration subscale (p = .004) and the need to be referred to the Mental Health Rehabilitation Unit had a relationship with the job/occupation subscale (p = .05), which was also inverse.

The variable total sum of resources as measured by the Lavik index showed an inverse relationship with the interpersonal behavior subscale (p = .043).

Finally, with respect to the individual items, appointments at the Community Mental Health Unit had an inverse relationship with the items “Do you have a girlfriend/boyfriend or stable partner” (p = .013), “How often can you maintain a coherent or rational conversation with her/him?” (p = .009) and “Go to

expositions" (p = .002). The Lavik index has an inverse relationship with the items "Do you have a girlfriend/boyfriend or stable partner?" (p = .008) "How often can you maintain a coherent or rational conversation with her/him?" (p = .023). The hospital admission variable and those associated with the Mental Health Rehabilitation Unit were eliminated because no specific item was significant.

The variance explained by the models represents 4% to 21% using the Nagelkerke measure, which is a small to moderate proportion of the variance.

The following was observed with respect to the relationship between behavior problems and use of mental health resources. In the second study in this Ph.D. Thesis, *Predictors in use of mental health resources: the role of behaviour problems in the patients with severe mental illness,* first, scores on the moderate and severe behavior problem scales were studied as predictors of all the different mental health resources for three years. Severe behavior problems had an inverse relationship with the number of appointments at the Community Mental Health Unit during the first year (p = .017) and with one or more hospitalizations in the Mental Health Hospitalization Unit during the first (p = .010) and second (p = .054) years, while there was no significant result for the rest of resources. The moderate behavior problem scale had an inverse relationship with a higher number of appointments in the first year (p = .010), the second year (p = .0.35) and third year (p = .0.31). There was also an inverse relationship with hospital admissions during the first year (p= .022), the second year (p = .024) and third year (p = .014). Neither of the two variables had a significant relationship with attention in the Mental Health Rehabilitation Unit.

With regard to the various dimensions of behavior problems, an inverse relationship was found between appointments at the Community Mental Health Unit and the underactivity/social withdrawal dimension during the first (p = .002) and second (p = .036) years. This underactivity/social withdrawal

subscale had an inverse relationship with admissions in the Hospitalization Unit during the first year (p =.016). Admissions during the second year, however, had an inverse relationship with the active behavior problem subscale (p = .024). Again no subscale had a relationship with attention in the Mental Health Rehabilitation Unit.

The variance explained by models represents between 3.1 and 8.8% using the Nagelkerke measure, which is a low proportion of small or moderate variance.

In the analyses of individual items, it may be observed that Item 14 ("Lying around not doing anything all day") was inversely related to appointments at the Community Mental Health Unit for the first (p = .002) and third (p = .009) years. Item 2 ("Talking about strange, odd things") was significantly related to appointments at the Community Mental Health Unit during the second year (p = .023) and admissions to the Hospitalization Unit the first (p = .001) and second (p = .002) years. Once again, there was no significant relationship with attendance at the Mental Health Rehabilitation Unit. The variance explained by models represents between 3.7 and 14.2% using the Nagelkerke measure, which is a low proportion of small or moderate variance.

In the third study in this Ph.D. Thesis, *Relationship between behavioral problems and use of mental health services in patients with a severe mental illness and the mediating role of the perceived burden of care*, the results found in the second study were replicated and confirmed. An inverse relationship was also found between underactivity/social withdrawal and appointments at the Community Mental Health Unit during the first (p < 001) and second years (p < .001) of follow-up.

2. Determine the role of the perceived family load variable in predicting the use of mental health resources in patients with a severe mental illness

With respect to perceived family burden and its relationship to use of mental health resources, the results show that Perceived Family Burden 2 “How often do you feel overwhelmed by these problems of the illness?” is related to the number of appointments in Years 1, 2 and 3 in the Community Mental Health Unit (in the first year there was also a relationship with Family Burden 1 “Do you feel able to bear the illness and the problems it causes?”), but that relationship decreased over time.

In the structural equation model in which the mediating role of perceived family burden between behavior problems and the use of mental health resources was evaluated, it was confirmed that behavior problems (all three types) influenced Family Burdens 1 and 2. Family Burdens 1 and 2 in turn influenced the number of appointments in Year 1, but not in Years 2 and 3, while the number of appointments in Years 2 and 3 were only influenced by appointments in earlier years. The fit of the model was optimum [$X^2(122)= 199.24$; *RMSEA*= 0.059; *CFI*= 0.96].

Finally, with regard to the effects of mediation, two indirect effects of behavior problems on number of appointments in Years 1, 2 and 3 were confirmed: a significant indirect effect of underactivity/social withdrawal on number of appointments in Year 1 through Family Burden 2 (*IC*=[0.025; 0.452]) and a significant indirect effect of underactivity/social withdrawal on number of appointments in Year 2 and number of appointments in Year 1 through Family Burden 1 (*IC*=[0.007; .0301]).

6. DISCUSIÓN

En este apartado se discutirán los resultados obtenidos en cada uno de los tres artículos que componen esta Tesis Doctoral. Así mismo, se relacionaran los hallazgos obtenidos y se analizaran conjuntamente cuando proceda.

6.1. Primer y segundo trabajos: funcionamiento social y problemas de conducta como predictores del uso de recursos de salud mental en personas con trastorno mental grave.

Los resultados de ambos trabajos muestran la relación que tiene el funcionamiento social y los problemas de conducta de los pacientes con trastorno mental grave con el uso de recursos de salud mental. Ambas medidas se han utilizado para comprender mejor los trastornos mentales graves. Su desarrollo proviene de la tendencia a retirar la atención de los síntomas clínicos y a ponerla en variables conductuales más directamente observables. Se han desarrollado principalmente dos enfoques derivados de este criterio, coincidentes con las variables empleadas en la presente Tesis Doctoral. El primero centrado en el funcionamiento social (Birchwood et al., 1990) y otro más relacionado con los problemas de conducta que interfieren en la integración social (Wykes & Stuart, 1986).

En el primer trabajo de la presente Tesis Doctoral se ha explorado el papel que juega el funcionamiento social y sus diferentes áreas en la predicción del uso de recursos sanitarios en pacientes con trastorno mental grave, utilizando un método de regresión logística bivariada. De manera general, se puede afirmar que algunas áreas del funcionamiento social predicen de manera significativa el tipo y la cantidad de recursos sanitarios.

La medida global de funcionamiento social solo es un predictor significativo de la necesidad de uno o más ingresos hospitalarios, no resultando de utilidad para el resto de variables de uso de recursos. Esto parece coherente con otros

resultados previos que relacionan un menor funcionamiento social con un mayor número de ingresos hospitalarios y visitas a urgencias (Raudino et al., 2014).

Sin embargo, la escala de funcionamiento social cuenta con varias subescalas que cubren áreas diferentes entre sí por lo que parecía importante hacer un estudio más pormenorizado de cada una de ellas. En las regresiones logísticas bivariadas que utilizan las subescalas de la Escala de Funcionamiento Social como variables independientes observamos que solo algunas de ellas resultan de utilidad de cara a predecir el uso de recursos. Además son diferentes en función del tipo de recurso analizado. De esta forma, se destaca la subescala de conducta interpersonal como una de las más significativas en nuestro análisis. Por un lado, predice junto con las actividades prosociales, el número de citas que los pacientes van a necesitar en una Unidad de Salud Mental Comunitaria. Por otro lado, en solitario y de manera más moderada está relacionada con la suma total de contactos que los pacientes necesitan durante los siguientes 12 meses a la evaluación. La dirección de esta relación es la esperada ya que un menor funcionamiento social está asociado a una mayor necesidad de recursos. Haciendo un análisis por ítem más pormenorizado vemos que los dos ítems más significativos de esta subescala son los referidos a la presencia de una pareja y a la capacidad de mantener una conversación juiciosa. La conducta interpersonal puede estar muy afectada en pacientes con trastornos psicóticos. En estudios previos se destaca como una variable predictora de sufrir un brote psicótico en jóvenes en riesgo, no siendo el caso del funcionamiento ocupacional (Velthorst et al., 2010). Al ser un área en la que los pacientes sufren más dificultades puede ser especialmente importante para profesionales, familiares y los propios pacientes, siendo su deterioro un determinante para una mayor atención sanitaria.

En el análisis por áreas vemos que la necesidad de un ingreso hospitalario, viene predicha por la escala de aislamiento social, siendo además, la regresión en la que se explica una mayor proporción de la varianza. Esto puede estar relacionado con estudios anteriores que relacionan tanto la necesidad de un primer ingreso como las rehospitalizaciones con el hecho de vivir solo, lo cual puede contribuir al aislamiento social (Oiesvold et al., 2000; Pezzimenti et al., 2006).

El uso de una Unidad de Rehabilitación de Salud Mental, sin embargo, se ve más influida por el funcionamiento en al área ocupacional, siendo los pacientes con una menor ocupación los que más necesitarán la atención en este tipo de unidades.

Como se puede constatar en estos casos, en general, un menor funcionamiento social predice un mayor uso de recursos. No es eso lo que ocurre con la subesacala de actividades prosociales, que predice de forma directa un mayor número de citas en una Unidad de Salud Mental Comunitaria. Este resultado, en un principio sorprendente, puede ser explicado quizás por la mediación de otra variable como puede ser la adherencia al tratamiento. El hecho de acudir a citas en una Unidad de Salud Mental Comunitaria es más voluntario de lo que puede ser un ingreso hospitalario o una derivación a una Unidad de Rehabilitación de Salud Mental. Por eso, pacientes que están más dispuestos a hacer actividades fuera de casa y relacionarse, es más probable que tengan más adherencia al tratamiento ambulatorio y por lo tanto sean objeto de más atención sanitaria ambulatoria. Sin embargo, esto es solo una hipótesis explicativa y debería ser corroborada en posteriores estudios.

En el segundo trabajo de la presente Tesis Doctoral se examina el papel de los problemas de conducta en la predicción del uso de recursos de salud mental en población con trastorno mental grave. Los datos obtenidos confirman, en

general, la hipótesis planteada, subrayando la importancia de los problemas de conducta como predictores de los recursos de salud mental.

En primer lugar se puede observar como los índices de problemas de conductas globales, como son el índice de problemas de conducta moderados y el índice de problemas de conductas severos, son predictores de la mayoría de los recursos de salud mental durante los 36 meses de seguimiento.

De forma específica el índice de problema de conducta moderados resulta más eficaz a la hora de predecir la mayoría de los recursos de salud mental, obteniendo una varianza explicada mayor. La única excepción a esto está en la necesidad de hospitalizaciones durante los 12 primeros meses de seguimiento, en el que la varianza explicada es mayor en el caso del índice de problemas de conducta severos.

Estos resultados parecen estar en consonancia con la propia naturaleza de la Unidad de Hospitalización de Salud Mental, dirigida fundamentalmente a acoger de forma puntual a los pacientes que presenten situaciones de mayor gravedad como una descompensación psicopatológica o un intento autolítico. Otra posible explicación es la argumentada por estudios previos que han encontrado resultados similares (Moreno-Kustner et al., 2011) que asocian los niveles más bajos de adaptación social, que en este estudio correspondería con los problemas de conducta severos, con una peor adherencia a los servicios de salud mental. Por lo tanto, la presencia de mayores problemas de conducta aunque en principio podría requerir de más atención por parte de los servicios de salud mental, a la vez podría influir en una mayor dificultad de los pacientes para aceptar dicha atención. La variable adherencia terapéutica ya fue comentada en el primer trabajo de la actual Tesis Doctoral como una posible variable moderadora entre el funcionamiento social y el uso de recursos de salud mental para explicar la posible contradicción de que, ante mayores niveles de funcionamiento y adaptación al medio, se produjera un mayor uso de recursos. Así, pacientes con conductas muy desadaptativas, podrían tener

dificultades para acceder a los servicios de salud mental mientras que aquellos con menos dificultades accederían de manera más sencilla, haciendo un mayor uso de recursos. Esto confirma la necesidad de incluir la adherencia terapéutica de los pacientes en futuros estudios acerca de los predictores de uso de recursos ya que podría estar alterando los resultados encontrados.

Además de las escalas globales de problemas de conducta, parece relevante estudiar de manera más específica qué tipo de problemas de conducta puede predecir cada uno de los recursos de salud mental estudiados ya que los problemas de conducta que pueden presentar los pacientes con trastorno mental grave pueden variar de forma considerable (Wykes & Sturt, 1986).

Para ello, se ha llevado a cabo la regresión logística con las subescalas del Listado de Problemas de Conducta. En este nuevo análisis se puede observar como la subescala baja actividad/aislamiento social resulta ser la mejor predictora para un mayor número de citas en la Unidad de Salud Mental Comunitaria durante los dos primeros años y las hospitalizaciones durante el primer año. No obstante, la subescala de problema de conductas activos parece predecir de mejor manera las hospitalizaciones durante el segundo año de seguimiento. Ninguna de las subescalas se ha visto capaz de predecir el uso de recursos de salud mental durante el tercer año.

La consistencia que muestran los resultados de subescala de baja actividad/aislamiento social parece ser coherente con estudios anteriores que han intentado determinar cuáles son los predictores de la evolución de los trastornos psicóticos. Varios autores han determinado la importancia de los síntomas negativos en la predicción de la evolución de los trastornos (Breier, Schreiber, Dyer, Pickar, 1991; Sipos, Harrison, Gunnell, Amin, Singh, 2001) y así mismo se ha demostrado como el aislamiento social, que estaría relacionada con la escala baja actividad/aislamiento social, también supone un importante predictor en la evolución del trastorno (Harvey, Jeffreys,

McNaught, Blizard, King, 2007) y en el uso de recursos de salud mental (Raudino et al., 2014).

Los resultados del primer y el segundo trabajo de la presente Tesis Doctoral concuerdan en este punto ya que el área de aislamiento de la Escala de Funcionamiento Social y el área de baja actividad/aislamiento social del Listado de Problemas de Conducta presentan muchos puntos en común y ambas parecen estar relacionadas de forma inversa con el uso de recursos de salud mental.

En el único caso en el que la escala baja actividad/aislamiento social no resulta la mejor predictora, es en la necesidad de hospitalizaciones durante el segundo año. Nuevamente en el caso del uso de la Unidad de la Hospitalización de Salud Mental, parece que la escala activa, que podría corresponder con la sintomatología positiva en la psicosis, resulta ser una mejor predictora, coincidiendo con la necesidad de hospitalizaciones en el caso de descompensación psicopatológica.

Finalmente en el último análisis se ha pretendido hacer un análisis más pormenorizado para ver si alguno de los problemas de conducta presentados en la escala puede predecir de manera satisfactoria el uso de recursos de salud mental. Los resultados arrojan que son principalmente dos ítems los que mejor predicen los diferentes usos de recursos: "estar tumbado todo el día sin hacer nada" y "hablar de cosas extrañas", siendo este último el mejor predictor en la necesidad de hospitalizaciones. El ítem "hablar de cosas extrañas" puede equipararse a nivel de sintomatología con la presencia de ideas delirantes y está en consonancia con los resultados encontrados por Raudino et al., (2014) sobre la importancia de las ideas delirantes en la predicción de hospitalizaciones y los síntomas psicóticos como predictores de hospitalizaciones más largas (Siskind et al., 2014).

Por su parte, el ítem "estar tumbado todo el día sin hacer nada" puede ser visto como el mejor representante de la escala baja actividad/aislamiento social y

por tanto de una sintomatología de carácter más negativa que parece predecir mejor la necesidad de recursos comunitarios.

Un dato también importante resulta de la falta de predictores encontrados para la Unidad de Rehabilitación. Este dato llama la atención y podría ser explicado, en parte, debido a una mayor heterogeneidad en el tipo de pacientes que atienden este tipo de unidades. Otra hipótesis es la importancia de otro tipo de variables en la predicción del uso de este tipo de dispositivos como puede ser el funcionamiento laboral (Raudino et al., 2014). Esto también se confirma en el primer trabajo de la presente Tesis Doctoral, ya que era la subescala de Empleo la que mejor predecía el uso de este recurso. El Listado de Problemas de Conducta no hace referencia al área de empleo por lo que no parece la más adecuada para predecir el uso de la Unidad de Rehabilitación de Salud Mental.

6.2. Tercer trabajo: estudio de la carga familiar percibida como predictora del uso de recursos de salud mental en personas con trastorno mental grave y su papel como variable mediadora entre los problemas de conducta y el uso de recursos de salud mental.

El objetivo del tercer trabajo de la presente Tesis Doctoral era comprobar si la variable carga familiar percibida se relacionaba con el uso de recursos de salud mental en pacientes con trastorno mental grave y observar si actuaba como mediadora en la relación entre problemas de conducta de los pacientes y el uso de recursos de salud mental. De manera general, podemos concluir, apoyados en los resultados que se confirman las dos hipótesis planteadas.

Por un lado, se confirma la hipótesis de que una mayor carga familiar percibida será una variable predictora de un mayor uso de recursos por parte de los pacientes con trastorno mental grave. En este sentido se encuentra una correlación positiva entre la variable de carga familiar percibida 2 "¿Con qué frecuencia se ve usted desbordado/a por estos problemas de la enfermedad?" con el número de citas en el primer, segundo y tercer año en una Unidad de

Salud Mental Comunitaria y una correlación positiva entre la carga familiar percibida 1 "¿Se siente usted capaz de sobrellevar la enfermedad y los problemas que ocasiona?" con el número de citas en el primer año. Esto concuerda con resultados anteriores que encontraban una relación entre algunas características de los cuidadores y el uso de recursos de salud mental (Smith, 2003).

Así mismo, también se pueden relacionar estos resultados con investigaciones que han observado una relación entre carga de los cuidadores y la evolución de los pacientes. Por ejemplo, Awad & Voruganti, (2008) y Barrio & Yamada, (2010) que lo relacionaron con las recaídas y el número de hospitalizaciones. En Nordstroem, Talbot Bernasconi, Berardo, Lalonde, (2017), han relacionado también la carga familiar con un mayor uso de recursos sanitarios.

La segunda hipótesis que se pretendía comprobar era si la carga familiar percibida mediaba la relación entre problemas de conducta y uso de recursos en pacientes con trastorno mental grave, de tal manera que la presencia de carga familiar percibida aumentara la relación entre problemas de conducta y uso de recursos de salud mental. En este caso vemos que la hipótesis se confirma ya que se encuentra una mediación total entre la baja actividad/aislamiento social y el número de citas el primer año y el segundo, siendo la variable mediadora la carga familiar tipo 2 en las citas en el primer año y la carga familiar tipo 1 y las citas del primer año, las variables mediadoras en las citas del segundo año.

Ninguno de los otros problemas de conducta demostró una correlación directa o mediada con el número de citas en el primer, segundo o tercer año.

En relación con lo encontrado en el segundo trabajo de la actual Tesis Doctoral se replican y confirman los resultados de que la variable de baja

actividad/aislamiento social parece ser la que tiene mayor poder predictivo en cuanto al uso de recursos de salud mental.

6.3. Limitaciones y procedimientos de minimización de las mismas en los tres trabajos.

Varias son las limitaciones que podemos encontrar en los tres trabajos que conforman la presente Tesis Doctoral.

La primera limitación tiene que ver con la inclusión en cada trabajo de una o dos variables solamente para predecir el uso de recursos. En otras investigaciones se han incluido más variedad de variables como aquellas referentes a medidas sociodemográficas, clínicas o del ambiente de los pacientes. Si bien, es cierto que dichas variables han sido estudiadas de forma más exhaustiva en la literatura previa y se conoce bastante bien su papel a la hora de predecir el uso de recursos de salud mental. Sin embargo, las variables abordadas en la presente Tesis Doctoral han sido escasamente estudiadas por lo que era necesario quizás, un estudio de su influencia individual antes de incluirlas en modelos más amplios de uso de recursos. Además el haberlas estudiado de forma individual, ha permitido un análisis más pormenorizado de cada subescala y de cada ítem individual.

Otra limitación es que la varianza explicada en los tres trabajos es baja o moderada. Sin embargo, esto es coherente con la existencia de otras variables que también están influyendo en un mayor uso de recursos como variables clínicas y sociodemográficas. Además es probable que la baja varianza explicada no sea debida solo al hecho de que el funcionamiento social sea un predictor menos potente sino que pueden estar influyendo otras variables como la adherencia terapéutica como ya se ha comentado anteriormente. Tanto el primer como el segundo trabajo han abierto la puerta a incluir esta variable en los modelos de predicción de uso de recursos.

Otra posible limitación del estudio supone que tanto el cuestionario Listado de Problemas de Conducta como la Escala de Funcionamiento Social han sido cumplimentados solamente por el cuidador principal. Aunque los cuidadores principales han resultado buenos informantes en general (Sabbag, Twamley, Vella, Heaton, Patterson, & Harvey, 2011) es cierto que sería interesante comprobar la información aportada por otros informantes como por ejemplo, el referente clínico del paciente o el propio paciente ya que los datos podrían variar.

Otra limitación es el instrumento de la medición subjetiva de la carga de los cuidadores. Los dos ítems incluidos para medir esta variable son también cumplimentados por los cuidadores principales por lo que representan más la carga percibida de los cuidadores que la carga real que puedan tener. Como propuesta para líneas de investigaciones futuras sería interesante comprobar si con una medida objetiva de la carga se mantienen los resultados encontrados.

Con respecto a otras variables que podrían incluirse en futuros estudios, cabe señalar otros recursos de salud como las citas en atención primaria y las visitas domiciliarias que sí han sido incluidos en otros estudios (Raudino et al., 2014) para tener un cuadro más completo de todos los recursos que puede necesitar cada paciente en función de los problemas de conducta que presente.

Por último, parece importante indicar una fortaleza de la presente investigación, y es el seguimiento prolongado de la muestra durante tres años. La mayor parte de los estudios sobre el uso de recursos son de carácter transversal o hacen un seguimiento a más corto plazo (Donisi et al., 2013; Moreno-Kustner et al., 2011; Raudino et al., 2014) por lo que la inclusión de datos durante los 36 meses posteriores a la evaluación se puede considerar como una confirmación de la consistencia de los resultados a largo plazo.

6.4. Aplicabilidad y utilidad práctica de los resultados en el área de la salud.

Los tres trabajos que conforman la actual Tesis Doctoral han sido planteados desde la necesidad de estudiar diversas variables que pueden estar influyendo en el uso de recursos de salud mental que hacen los pacientes con trastorno mental grave. Esta línea de investigación ha ido incluyendo cada vez más variables diferentes pero todavía son muchas las que no han sido exploradas.

El tener modelos cada vez más completos acerca de las variables que predicen el uso de recursos de salud mental permitiría hacer una planificación adecuada y eficiente de cuáles son los recursos de salud mental que necesitan los pacientes, evitando tener recursos desaprovechados o tener recursos congestionados que no dan abasto para cubrir las necesidades.

Esta planificación para ser eficiente debe basarse en estudios científicos que estudien las necesidades de los pacientes. Esto por un lado, mejoraría la atención a los pacientes y sus familiares y por otro, disminuiría el gasto público asociado a los trastornos mentales graves.

Por lo tanto, la primera aplicación práctica de los resultados encontrados sería la de incluir las variables psicosociales como son el funcionamiento social, los problemas de conducta y la carga familiar en los modelos amplios que se desarrollen en el futuro sobre el uso de recursos de salud mental.

Por otro lado, los tres trabajos hacen referencia a variables que pueden ser muy relevantes de cara a la evolución de los pacientes con trastorno mental grave. Dichas variables (funcionamiento social, problemas de conducta y carga familiar percibida) no suelen ser evaluadas de forma explícita al comienzo de un tratamiento y sin embargo, como se ha visto, pueden arrojar mucha información acerca de la evolución de un paciente y del uso de recursos de salud mental que va a hacer. Por lo tanto, esto nos indica dos conclusiones.

Primero, que es importante evaluar estas áreas de forma explícita y precisa al igual que se evalúan por ejemplo, las variables clínicas como la sintomatología. Para ello es relevante contar con instrumentos de evaluación que tengan adecuadas propiedades psicométricas y que estén adaptados para la práctica clínica diaria. En ese sentido es especialmente importante que tengan un tiempo de aplicación corto.

Segundo, que es muy importante intervenir en estos ámbitos de cara a mejorar la evolución de los pacientes y para disminuir el uso de recursos de salud mental que van a hacer como por ejemplo, el número de episodios de hospitalización.

En investigaciones anteriores ya se menciona el funcionamiento social como uno de los determinantes en la evolución del trastorno, la adaptación al medio comunitario de los pacientes (Johnstone et al., 1990; Perlick et al., 1992; Rajkumar & Thara, 1989) y el coste de los servicios (Byford et al., 2001; McCrone et al., 1998) y el número de ingresos y visitas a urgencias (Raudino et al., 2014).

Por todo ello, parece importante desarrollar en el ámbito clínico programas capaces de aumentar la capacidad de adaptación del paciente a su medio social por ejemplo intervenciones dirigidas a mejorar las habilidades sociales. Precisamente, en los tres trabajos de la presente Tesis Doctoral se ha puesto de manifiesto que el aislamiento social y la baja actividad son las variables más relevantes a la hora de predecir el uso de recursos de salud mental por lo que programas dirigidos a aumentar la red social del paciente y sus habilidades para interaccionar pueden ser los más importantes de cara a mejorar su pronóstico.

Con respecto a la carga familiar, algunos autores ya han señalado que una reducción de la carga familiar, puede implicar una mejor evolución en los pacientes con trastornos mentales con menos recaídas y periodos de

hospitalización (Sono et al., 2012). Por lo que, a la vez que los programas dirigidos a los pacientes, se deberían implementar otros dirigidos a los familiares con el objetivo de dotarles de habilidades de cara al cuidado de sus pacientes y para reducir su nivel de carga percibida.

Todo ello contribuiría a una mejora en la evolución de los pacientes con trastorno mental grave y una disminución en su uso de recursos de salud mental.

7. CONCLUSIONS

In the first place, the purpose of the first study in this Ph.D. Thesis was to determine the influence of social functioning on patients with a severe mental illness.

The results concluded that both the overall social functioning score and several of its dimensions predicted the use of mental health resources. Thus the overall social functioning score was related above all to the presence of hospitalization episodes during follow-up. The interpersonal behavior dimension was related both to community services and hospitalization in such a way that the poorer social functioning in that area, the more use was made of mental health resources. Other relevant variables were social withdrawal, which predicted episodes of hospitalization and the occupation and employment area, which predicted use of the Mental Health Rehabilitation Unit. As a conclusion of the first study in this Ph.D. Thesis, it may be observed that several areas of social functioning predicted mental health resources during a 12-month follow-up period.

The purpose of the second study in this Ph.D. Thesis was to determine the influence of behavior problems shown by persons with severe mental illness on their use of mental health resources.

The results found showed that overall behavior problem scales and scores on the Severe Behavior Problems and Moderate Behavior Problems scales influenced the use of mental health resources, where moderate behavior problems were the most relevant to both community resources and hospitalization. With respect to the different areas of behavior problems, it was the underactivity/social withdrawal area which best predicted the use of resources. This was less so in the case of hospitalization episodes the second year when it was the active problem dimension which had the most influence.

In the item-by-item analysis, “Lying around all day” had the most influence, and was therefore the best representative of the underactivity/social withdrawal dimension. This agrees with the results found in the first study as it was again the dimension related to the interpersonal area, and especially isolation, which most influenced the use of mental health resources during the 36-month follow-up.

Finally, in the third study in this Ph.D. Thesis, a family variable was entered in the prediction model. In this case it was attempted to determine the influence of two variables (behavior problems of patients and perceived family burden) on the use of mental health resources and also propose a model in which perceived family burden acts as mediator between behavior problems and use of mental health resources.

The results confirmed findings of the second study, showing that overall behavior problem scores, and especially the underactivity/social withdrawal dimension, best predicted the use of community mental health resources. Thus the hypothesis that perceived family burden, insofar as the family’s perception of being overwhelmed by their relative’s care, acts as a mediating variable between behavior problems and use of mental health resources by patients with a severe mental illness was also confirmed.

To summarize the conclusions of the three studies in this Ph.D. Thesis, the psychosocial variables of patients with a severe mental illness with which it was attempted to measure their adaptation to their social setting (social functioning and behavior problems) were observed to influence long-term use of mental health resources.

At the same time, it seems that one variable of the family characteristics, perceived care burden, also influences and mediates in the relationship between behavior problems and the use of resources in such a way that the

more behavior problems a patient has, the heavier the perceived burden, and therefore, greater use of resources.

8. RESUMEN / SUMMARY

En la presente Tesis Doctoral se han llevado a cabo tres trabajos empíricos y pioneros que abordan las variables psicosociales que afectan al uso de recursos de salud mental en pacientes con trastorno mental grave.

En concreto, en el primer trabajo el objetivo era comprobar si el funcionamiento social puede predecir el uso de recursos de salud mental en una muestra de pacientes con trastorno mental grave. La hipótesis principal es que un menor funcionamiento social implicará un mayor uso de recursos a corto plazo. Para ello se aplicó una escala de funcionamiento social a una muestra de 172 pacientes atendidos en una Unidad de Salud Mental Comunitaria y luego se hizo un análisis de regresión logística bivariada para identificar qué áreas específicas son predictores del uso de recursos de salud mental en 12 meses de seguimiento. La puntuación global de funcionamiento social predice la necesidad de ingresos hospitalarios. Además varias subescalas se han encontrado como predictoras significativas de diferentes tipos de recursos de salud mental. La conducta interpersonal tiene un papel relevante en el número de citas ambulatorias, mientras que el aislamiento social predice de forma significativa la necesidad de ingresos hospitalarios y el área ocupacional está relacionada con la derivación a un recurso de rehabilitación.

El segundo trabajo es similar al primero en cuanto a que el objetivo es comprobar si otra variable psicosocial es relevante a la hora de predecir el uso de recursos de salud mental en pacientes con trastorno mental grave. Para ello se evalúo a 185 pacientes en una Unidad de Salud Mental Comunitaria con el Listado de Problemas de Conducta. Posteriormente se llevó a cabo una regresion logística bivariada para identificar qué problemas de conducta podían ser predictores específicos del uso de recursos de salud mental. Los resultados indican que el índice general de problemas de conducta predice tanto el uso de

recursos de hospitalizaciones como de las consultas externas. De todas las diferentes áreas, la de baja actividad/aislamiento social es la que mejor actúa como predictora. Estos resultados confirman el papel de los problemas de conducta como predictores en el uso de recursos de salud mental en personas con trastorno mental grave.

Por último, el tercer trabajo es diferente a los dos primeros en cuanto al tipo de variable predictora y al método empleado.

El objetivo de este estudio trata de indagar en la relación entre dos variables: los problemas de conducta y la carga familiar y el uso de recursos de salud mental en pacientes con trastorno mental. Nuestra hipótesis es que la carga familiar percibida mediará entre los problemas de conducta de los pacientes con trastorno mental grave y el uso de recursos de salud mental. En este estudio se incluye una variable que estudia una característica de los principales cuidadores en lugar de solo variables relacionadas con los pacientes.

Para comprobar la hipótesis, 179 pacientes atendidos en una Unidad de Salud Mental Comunitaria fueron evaluados a través de una escala que completaron sus familiares: El Listado de Problemas de Conducta. Así mismo sus familiares contestaron un cuestionario acerca de la carga familiar percibida como cuidadores principales de dichos pacientes. Se llevó a cabo un análisis de ecuaciones estructurales para comprobar nuestra hipótesis. Los resultados mostraron que tanto los problemas de conducta como la carga familiar percibida son buenos predictores del uso de recursos de salud mental que hacen los pacientes con trastorno mental grave, siendo la carga familiar percibida una variable mediadora entre los problemas de conducta y el uso de recursos.

Las tres variables abordadas en la presente Tesis Doctoral: funcionamiento social, problemas de conducta y carga familiar percibida se han mostrado relevantes a la hora de predecir el uso de recursos de salud mental en personas

con trastorno mental grave. Por ello será recomendable incluir estas variables en los modelos de predicción de recursos de salud mental.

Three pioneering empirical studies of the psychosocial variables affecting use of mental health resources by patients with a severe mental illness were carried out for this Ph.D. Thesis.

The objective of the first study was to find out whether social functioning could predict use of mental health resources in a sample of patients with a severe mental illness. The main hypothesis was that less social functioning implies greater use of resources in the short-term. A social functioning scale was applied to a sample of 172 patients receiving attention at a Community Mental Health Unit. Then a bivariate logistic regression analysis was performed to identify the specific areas predicting use of mental health resources during a 12-month follow-up. The overall social functioning score predicted the need for hospital admissions. Furthermore, several of the subscales were found to be significant predictors of different types of mental health resources. Interpersonal behavior had a relevant role in the number of outpatient appointments, while social withdrawal significantly predicted the need for hospitalization and the occupational area was related to referral to a rehabilitation resource.

The second study was similar to the first insofar as the objective was to find out whether another psychosocial variable was relevant in predicting use of mental health resources with a severe mental illness. For this, 185 patients with problems on the Behavior Problems Inventory at a Community Mental Health Unit were evaluated. Then a bivariate logistic regression was done to identify which behavior problems could be specific predictors of the use of mental health resources. The results showed that the general index of behavior problems predicted both use of hospitalization resources as well as outpatient visits. Of all the different areas, underactivity/social withdrawal was the best

predictor. These results confirm the role of behavior problems as predictors in the use of mental health resources by persons with a severe mental health illness.

Finally, the third study was different from the first two with regard to the type of predictor variable and the method used.

The objective of this study was to examine the relationship between two variables, behavior problems and family burden, and the use of mental health resources by patients with a mental illness. Our hypothesis was that perceived family burden would mediate between behavior problems of patients with a severe mental illness and the use of mental health resources. A variable was included to study a characteristic of the main caregivers instead of just variables related to patients.

To test the hypothesis, 179 patients attended at a Community Mental Health Unit were evaluated using the Behavior Problem Inventory, which was filled out by the family member who was the patient's main caregiver, and who also answered a questionnaire on the perceived family burden. A structural equation analysis was carried out to test our hypothesis. The results showed that both the behavior problems and perceived family burden were good predictors of the use of mental health resources by patients with a severe mental illness, where family burden mediated between behavior problems and use of resources.

The three variables studied in this Ph.D. Thesis, social functioning, behavior problems and perceived family burden were shown to be relevant in predicting the use of mental health resources by persons with a severe mental illness. It would therefore be recommendable to include these variables in mental health resource prediction models.

9. REFERENCIAS

- Andrews, G., Issakidis, C., Sanderson, K., Corry, J., & Lapsley, H. (2004). Utilising survey data to inform public policy: Comparison of the cost-effectiveness of treatment of ten mental disorders. *British Journal of Psychiatry*, *184*, 526-533. doi:10.1192/bjp.184.6.526
- American Psychiatric Association, 2013. Diagnostic and Statistical Manual of Mental Disorders: DSM-5. Author, Washington, DC.
- Awad, A. G., & Voruganti, L. N. P. (2008). The burden of schizophrenia on caregivers - A review. *Pharmacoeconomics*, *26*(2), 149-162.
- Barrio, C. and Yamada, A.M. (2010). Culturally based intervention development: The case of latino families dealing with schizophr*enia*. *Research Social Work Practice 2*0, 483-492. doi: 10.1177/1049731510361613
- Birchwood, M., Smith, J., Cochrane, R., Wetton, S., & Copestake, S. (1990). The social functioning scale - the development and validation of a new scale of social-adjustment for use in family intervention programs with schizophrenic-patients. *British Journal of Psychiatry*, *157*, 853-859. doi:10.1192/bjp.157.6.853
- Boye, B., Bentsen, H., Ulstein, I., Notland, T. H., Lersbryggen, A., Lingjaerde, O., & Malt, U. F. (2001). Relatives' distress and patients' symptoms and behaviours: a prospective study of patients with schizophrenia and their relatives. *Acta Psychiatrica Scandinavica*, *104*(1), 42-50. doi:10.1034/j.1600-0447.2001.00190.x
- Breier, A., Schreiber, J. L., Dyer, J., & Pickar, D. (1991). National-institute-of-mental-health longitudinal-study of chronic-schizophrenia - prognosis and predictors of outcome. *Archives of General Psychiatry*, *48*(3), 239-246.

- Byford, S., Barber, J. A., Fiander, M., Marshall, S., & Green, J. (2001). Factors that influence the cost of caring for patients with severe psychotic illness Report from the UK 700 trial. *The British Journal of Psychiatry, 178*(5), 441-447.
- Carpenter, W. T., & Strauss, J. S. (1991). The prediction of outcome in schizophrenia. 11-year-follow-up of the washington ipss cohort. *Journal of Nervous and Mental Disease, 179* (9), 517-525. doi:10.1097/00005053-199109000-00001
- Carr, V. J., Johnston, P. J., Lewin, T. J., Rajkumar, S., Carter, G. L., & Issakidis, C. (2003). Patterns of service use among persons with schizophrenia and other psychotic disorders. *Psychiatric Services, 54* (2), 226-235. doi:10.1176/appi.ps.54.2.226
- Carra, G., Cazzullo, C. L., & Clerici, M. (2012). The association between expressed emotion, illness severity and subjective burden of care in relatives of patients with schizophrenia. Findings from an Italian population. *Bmc Psychiatry, 12*, 8. doi:10.1186/1471-244x-12-140
- Cella, M., Stratta, P., Chahal, K., Huddy, V., Reeder, C., & Wykes, T. (2014). Measuring community functioning in schizophrenia with the Social Behaviour Schedule. *Schizophrenia Research, 153* (1-3), 220-224. doi:10.1016/j.schres.2013.12.016
- Chong, H. Y., Teoh, S. L., Wu, D. B. C., Kotirum, S., Chiou, C. F., & Chaiyakunapruk, N. (2016). Global economic burden of schizophrenia: a systematic review. *Neuropsychiatric Disease and Treatment, 12*, 357-373. doi:10.2147/ndt.s96649
- Curson, D. A., Duke, P. J., Harvey, C. A., Pantelis, C., & Barnes, T. R. E. (1999). Four behavioural syndromes of schizophrenia: a replication in a second inner-London epidemiological sample. *Schizophrenia Research, 37*(2), 165-176. doi:10.1016/s0920-9964(98)00151-0

- Donisi, V., Tedeschi, F., Percudani, M., Fiorillo, A., Confalonieri, L., De Rosa, C., . . . Amaddeo, F. (2013). Prediction of community mental health service utilization by individual and ecological level socio-economic factors. *Psychiatry Research, 209*(3), 691-698. doi:10.1016/j.psychres.2013.02.031.
- Hanzawa, S., Bae, J.K., Bae, Y.J., Chae, M.H., Tanaka, H., Nakane, H., et al., (2013). Psychological impact on caregivers traumatized by the violent behaviour of a family member with schizophrenia. *Asian Journal of Psychiatry*. 6, 46-51.
- Harvey, C. A., Curson, D. A., Pantelis, C., Taylor, J., & Barnes, T. R. E. (1996). Four behavioural syndromes of schizophrenia. *British Journal of Psychiatry, 168*(5), 562-570. doi:10.1192/bjp.168.5.562
- Harvey, C. A., Jeffreys, S. E., McNaught, A. S., Blizard, R. A., & King, M. B. (2007). The camden schizophrenia surveys III: Five-year outcome of a sample of individuals from a prevalence survey and the importance of social relationships. *International Journal of Social Psychiatry*, *53*(4), 340-356. doi:10.1177/0020764006074529
- Have, M. T., Oldehinkel, A., Vollebergh, W., & Ormel, J. (2003). Does educational background explain inequalities in care service use for mental health problems in the Dutch general population? *Acta Psychiatrica Scandinavica, 107*(3), 178-187.
- Jin, H., Folsom, D. P., Lindamer, L., Bailey, A., Hawthorne, W., Garcia, P., & Jeste, D. V. (2003). Patterns of public mental health service use by age in patients with schizophrenia. *American Journal of Geriatric Psychiatry, 11*(5), 525-533. doi:10.1176/appi.ajgp.11.5.525
- Johnstone, E. C., Macmillan, J. F., Frith, C. D., Benn, D. K., & Crow, T. J. (1990). Further investigation of the predictors of outcome following

1st schizophrenic episodes. *British Journal of Psychiatry, 157*, 182-189. doi:10.1192/bjp.157.2.182

- Kilian, R., Matschinger, H., Becker, T., & Angermeyer, M. C. (2003). A longitudinal analysis of the impact of social and clinical characteristics on the costs of schizophrenia treatment. *Acta Psychiatrica Scandinavica, 107* (5), 351-360. doi:10.1034/j.1600-0447.2003.00072.x
- Knapp, M., Mangalore, R., & Simon, J. (2004). The global costs of schizophrenia. *Schizophrenia Bulletin, 30*(2), 279-293.
- Kuipers, E. (2010). Time for a separate psychosis caregiver service? *Journal of Mental Health, 19*(5), 401-404. doi:10.3109/09638237.2010.510155
- Lay, B., Lauber, C., & Rossler, W. (2006). Prediction of in-patient use in first-admitted patients with psychosis. *European Psychiatry, 21*(6), 401-409. doi:10.1016/j.eurpsy.2005.12.004
- Lee, S., Laiewski, L., & Choi, S. H. (2014). Racial-Ethnic Variation in US Mental Health Service Use Among Latino and Asian Non-US Citizens. *Psychiatric Services, 65*(1), 68-74. doi:10.1176/appi.ps.201200430
- Lindamer, L. A., Bailey, A., Hawthorne, W., Folsom, D. P., Gilmer, T. P., Garcia, P., . . . Jeste, D. V. (2003). Gender differences in characteristics and service use of public mental health patients with schizophrenia. *Psychiatric Services, 54*(10), 1407-1409. doi:10.1176/appi.ps.54.10.1407
- McCrone, P., Thornicroft, G., Parkman, S., Nathaniel-James, D., & Ojurongbe, W. (1998). Predictors of mental health service costs for representative cases of psychosis in south London. *Psychological Medicine, 28*(1), 159-164. doi:10.1017/s0033291797005692

- Moller-Leimkuhler, A.M., and Wiesheu, A. (2012). Caregiver burden in chronic mental illness: The role of patient and caregiver characteristics. *European Archives of Psychiatry and Clinical Neuroscience*, 262, 157-166. doi: 10.1007/s00406-011-0215-5
- Moreno-Kustner, B., Mayoral, F., Rivas, F., Angona, P., Requena, J., Garcia-Herrera, J. M., . . . Bellon, J. A. (2011). Factors associated with use of community mental health services by schizophrenia patients using multilevel analysis. *Bmc Health Services Research, 11*, 10. doi:10.1186/1472-6963-11-257
- National Institute of Mental Health **(**1987**)** Towards a Model for a Comprehensive Community-Based Mental Health System. Washington, DC: NIMH.
- Nordstroem, A. L., Talbot, D., Bernasconi, C., Berardo, C. G., and Lalonde, J. (2017). Burden of illness of people with persistent symptoms of schizophrenia: A multinational cross-sectional study. *International Journal of Social Psychiatry*, 63, 139-150. doi: 10.1177/0020764016688040
- Ngamini Ngui, A., Perreault, M., Fleury, M. J., & Caron, J. (2012). A multi-level study of the determinants of mental health service utilization. *Revue d'epidemiologie et de sante publique, 60*(2), 85-93. doi:10.1016/j.respe.2011.09.007
- Oiesvold, T., Saarento, O., Sytema, S., Vinding, H., Gostas, G., Lonnerberg, O., . . . Hansson, L. (2000). Predictors for readmission risk of new patients: the Nordic Comparative Study on Sectorized Psychiatry. *Acta Psychiatrica Scandinavica, 101*(5), 367-373. doi:10.1034/j.1600-0447.2000.101005367.x
- Perlick, D., Stastny, P., Mattis, S., & Teresi, J. (1992). Contribution of family, cognitive and clinical dimensions to long-term outcome in

schizophrenia. *Schizophrenia Research, 6* (3), 257-265. doi:10.1016/0920-9964(92)90009-t.

- Pezzimenti, M., Haro, J. M., Ochoa, S., Gonzalez, J. L., Almenara, J., Alonso, J., …Grp, P. (2006). Assessment of service use patterns in out-patients with schizophrenia: a Spanish study. *Acta Psychiatrica Scandinavica, 114*, 12-18. doi: 10.1111/j.1600-0447.2006.00915.x
- Rajkumar, S., & Thara, R. (1989). Factors affecting relapse in schizophrenia. *Schizophrenia Research, 2* (4-5), 403-409. doi:10.1016/0920-9964(89)90033-9
- Raudino, A., Carr, V. J., Bush, R., Saw, S., Burgess, P., & Morgan, V. A. (2014). Patterns of service utilisation in psychosis: Findings of the 2010 Australian National Survey of Psychosis. *Australian and New Zealand Journal of Psychiatry, 48* (4), 341-351. doi:10.1177/0004867413511996
- Sabbag, S., Twamley, E. M., Vella, L., Heaton, R. K., Patterson, T. L., & Harvey, P. D. (2011). Assessing everyday functioning in schizophrenia: Not all informants seem equally informative. *Schizophrenia Research, 131* (1-3), 250-255. doi:10.1016/j.schres.2011.05.003
- Sipos, A., Harrison, G., Gunnell, D., Amin, S., & Singh, S. P. (2001). Patterns and predictors of hospitalisation in first-episode psychosis Prospective cohort study. *The British Journal of Psychiatry, 178* (6), 518-523.
- Siskind, D., Harris, M., Diminic, S., Carstensen, G., Robinson, G., & Whiteford, H. (2014). Predictors of mental health-related acute service utilisation and treatment costs in the 12 months following an acute psychiatric admission. *Australian and New Zealand Journal of Psychiatry, 48* (11), 1048-1058. doi:10.1177/0004867414543566

- Smith, G. C. (2003). Patterns and predictors of service use and unmet needs among aging families of adults with severe mental illness. *Psychiatric Services, 54*(6), 871-877. doi:10.1176/appi.ps.54.6.871
- Sono, T., Oshima, I., Ito, J., Nishio, M., Suzuki, Y., Horiuchi, K., . . . Tsukada, K. (2012). Family Support in Assertive Community Treatment: An Analysis of Client Outcomes. *Community Mental Health Journal, 48*(4), 463-470. doi:10.1007/s10597-011-9444-3
- Szkultecka-Debek, M., Miernik, K., Stelmachowski, J., Jakovljevic, M., Jukic, V., Aadamsoo, K., . . . Augustynska, J. (2016). Schizophrenia causes significant burden to patients' and caregivers' lives. *Psychiatria Danubina, 28*(2), 104-110.
- Tello, J. E., Mazzi, M., Tansella, M., Bonizzato, P., Jones, J., & Amaddeo, F. (2005). Does socioeconomic status affect the use of community-based psychiatric services? A south Verona case register study. *Acta Psychiatrica Scandinavica, 112*(3), 215-223.
- Thornicroft, G., & Tansella, M. (2013). The balanced care model: the case for both hospital- and community-based mental healthcare. *British Journal of Psychiatry, 202*(4), 246-248. doi:10.1192/bjp.bp.112.111377
- Usall, J., Iniesta, R., Ochoa, S., Villalta, V., Suarez, D., Pezzimenti, M., . . . Millan, J. (2012). Gender differences in the use of mental health services in a Barcelona area. *European Journal of Psychiatry, 26*(1), 30-40.
- Velthorst, E., Nieman, D. H., Linszen, D., Becker, H., de Haan, L., Dingemans, P. M., . . . Grp, E. (2010). Disability in people clinically at high risk of psychosis. *British Journal of Psychiatry, 197*(4), 278-284. doi:10.1192/bjp.bp.109.075036
- Wolthaus, J. E. D., Dingemans, P., Schene, A. H., Linszen, D. H., Wiersma, D., Van den Bosch, R. J., . . . Hijman, R. (2002). Caregiver

burden in recent-onset schizophrenia and spectrum disorders: The influence of symptoms and personality traits. *Journal of Nervous and Mental Disease, 190*(4), 241-247. doi:10.1097/01.nmd.0000012872.08131.50

- Wykes, T., & Sturt, E. (1986). The measurement of social-behavior in psychiatric-patients - an assessment of the reliability and validity of the sbs schedule. *British Journal of Psychiatry, 148*, 1-11. doi:10.1192/bjp.148.1.1